MACWORLD

October 1985 $3.95

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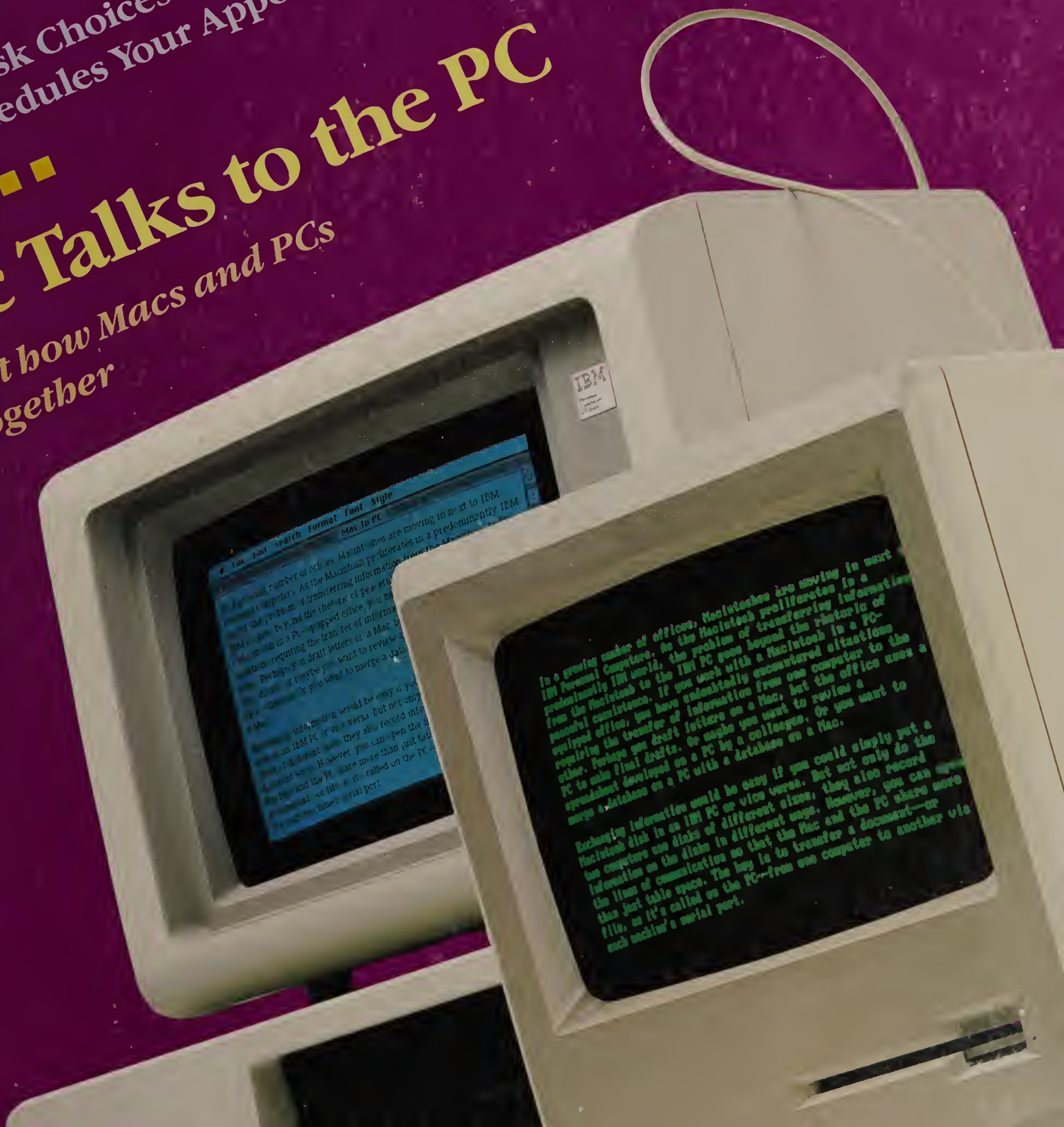
The Macintosh™ Magazine

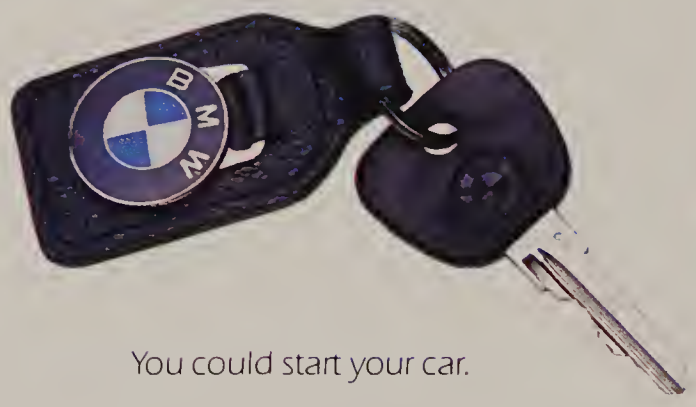
Hard Disk Choices Made Easy
Mac Schedules Your Appointments!

Mac Talks to the PC

Find out how Macs and PCs work together



OverVUE asks: What can you do in two ticks of a clock?



You could start your car.

Pet your puppy.

Roll the dice.

Dunk a donut.

Catch a ray.

You'd be amazed.

Introducing OverVUE 2.0. Much more than a database.

As you know, two seconds isn't very long. Usually, you can't accomplish much in such a short amount of time. But, with OverVUE, two seconds is all the time you'll need to sort, total, chart, select, calculate, zoom, and much, much more.

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OverVUE 2.0. It's incredibly fast. It's powerful. It's easy to use. You won't find a more complete database program anywhere!

So what are you waiting for? It will only take a few seconds to hop in your car, drive to the nearest software dealer and pick up your very own copy of OverVUE.

OverVUE™
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MACWORLD

October 1985

The Macintosh™ Magazine

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October 1985
Volume 2, Number 10

Macworld™ (ISSN 0741-8647) is published monthly by PC World Communications, Inc., 555 De Haro St., San Francisco, CA 94107. Subscription rates are $30 for 12 issues, $50 for 24 issues, and $70 for 36 issues. Foreign orders must be prepaid in U.S. funds. Additional postage outside the U.S.: add $6 per year in Canada and Mexico; add $12 per year for surface mail or $80 per year for airmail in all other countries. For subscriber service questions call 800/525-0643 or write: Macworld Subscriber Services, P.O. Box 54529, Boulder, CO 80322. Application to mail at Second Class pending at San Francisco. POSTMASTER: Send address changes to *Macworld,* P.O. Box 54529, Boulder, CO 80323. Editorial and business offices: 555 De Haro St., San Francisco, CA 94107, 415/861-3861.
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BPA

Whaddaya mean you never heard uva Flying Mouse?

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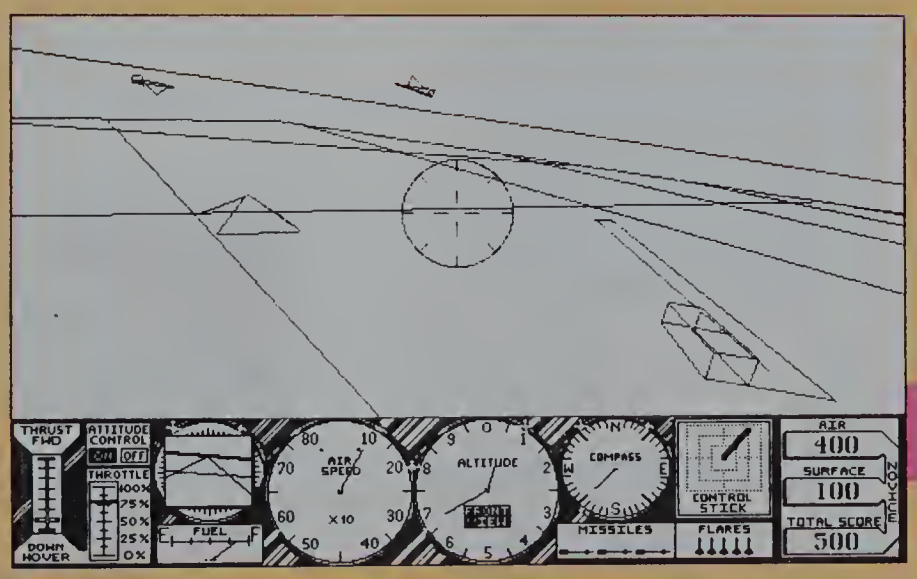
Ya see there's this island off the coast somewhere . . .The Harrier Jump Jet, one of the world's most sophisticated technological marvels, combines the ability to take off and land vertically like a helicopter with the speed and punch of the latest in modern jet armament. Your mission, should you decide to accept it, is to pilot your Harrier from the deck of an aircraft carrier, take out enemy aircraft, locate and destroy enemy headquarters & fuel depot, and safely land on the deck of your aircraft carrier.

Simple isn't it? Hardly! Facing you will be some of the world's nastiest enemy fighter planes launching heat seeking missiles. The good news is that you have 3 Sidewinder missiles, two 30mm Aden cannon pods and the ability to maneuver like no other jet in history!



The bad news is you have only one plane between five enemy aircraft and your carrier.

Now wipe that sweat off your brow, don your helmet and gloves, strap yourself into your seat and GOOD LUCK! Nuff said, it's CLOBBERIN' time! Harrier Strike Mission—a 3-Dimensional Flight Combat Simulator for your 128K or 512K Macintosh. The first in a series of new projective 3-D simulations from MILES COMPUTING, INC. (those great folks that brought you MacAttack! and Mac the Knife!)

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Makers of Mac the Knife™ and MAC ATTACK

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TurboCharger is a "disk cache" system, it makes your Macintosh faster by speeding disk access. TurboCharger works automatically as you use your Macintosh, analyzing disk usage to increase performance.

TurboCharger will make your Macintosh into a more effective tool. Now you can return to the desktop 300% faster, load programs 400% faster, re-organize your database 1200% faster. In fact, TurboCharger works automatically with all of your Macintosh software. Guaranteed.

Make your Macintosh faster now.
Ask for TurboCharger™ at your local dealer, or call us at (212) 532-8720

TurboCharger is the only software which gives you all these features:

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- TurboCharger works automatically
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† We Guarantee that TurboCharger will work as advertised. Try it. If you feel that it does not live up to our advertising, return it for a complete refund. This offer is available through participating dealers only.

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NEW YORK, NY 10001
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Paradise's MAC 10,™ the 10mb hard disk subsystem designed for the MAC.

Your Mac's been lonely too long.

(Advertisement)

You just found the right hard-disk subsystem for your MAC... Check out the Paradise MAC 10.

Easy To Look At: Beauty isn't everything but most hard disk MAC drives will scare your computer to death in the morning! The MAC 10 is artfully engineered to complement the aesthetics of the MAC.

Nice To Have Around: Just 3.5" wide and no deeper than the MAC, the MAC 10 has a smaller footprint than any other external MAC hard drive subsystem. Nice to carry around too... Only 5 pounds.

The Right Breeding: Paradise Systems is known for innovative engineering. The MAC 10 is the latest in a line of ground breaking micro computer peripheral products from Paradise.

Accommodating: 10 MB of formatted data storage, there when you need it. Equal to 30 MAC floppy drives! Storage you'll want for *Jazz* and other popular business applications.

Your MAC Can Relate To It: 5 times faster than the add-on MAC floppy.

So Can You: Just plug in the MAC 10 and you're ready to go ... That's it!

No Surprises: The MAC 10 won't void your *Apple* warranty, or require you to modify your system. The user interface uses pull down menus, just like the one you're used to on the MAC.

Long Term Commitment: The MAC 10 comes with a 1 year limited warranty*.

Do Your MAC A Favor: Go see your Apple dealer and look at a MAC 10 or call us toll free at (800) 822-2020 (CA.) or (800) 527-7977 (outside CA.). It will be the beginning of a wonderful relationship.

Specifications:

CAPACITY:
- 12.75 mb unformatted
- 10mb formatted

DISK DRIVE SEEK TIMES:
- Adjacent track . . . . . 18 ms
- Average . . . . . 85 ms
- Maximum . . . . . 180 ms

ROTATIONAL SPEED:
- 3600 RPM

POWER REQUIREMENTS:
- 110/220 Volts AC, 50/60hz, 50 watts max.

DIMENSIONS:
- Height . . . . . 5.5 inches
- Width . . . . . 3.5 inches
- Depth . . . . . 10.8 inches

WEIGHT:
- Approx. 5 lbs.

INTERFACE:
- Connects to your MAC via the modem or printer port. Printer connector and integral print spooler provided on MAC-10.

**See retailer for details.*

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But now your images don't have to stay black and white. Any image or text created with MacPaint,™ MacWrite™ or other Macintosh software can be printed in eight colors including black and white. All it takes is the new NEC Colormate™ kit and an NEC Color Pinwriter™ dot matrix printer.

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And color is not the only bright thing about an NEC Color Pinwriter.

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Electronic Mail for the Macintosh Office.

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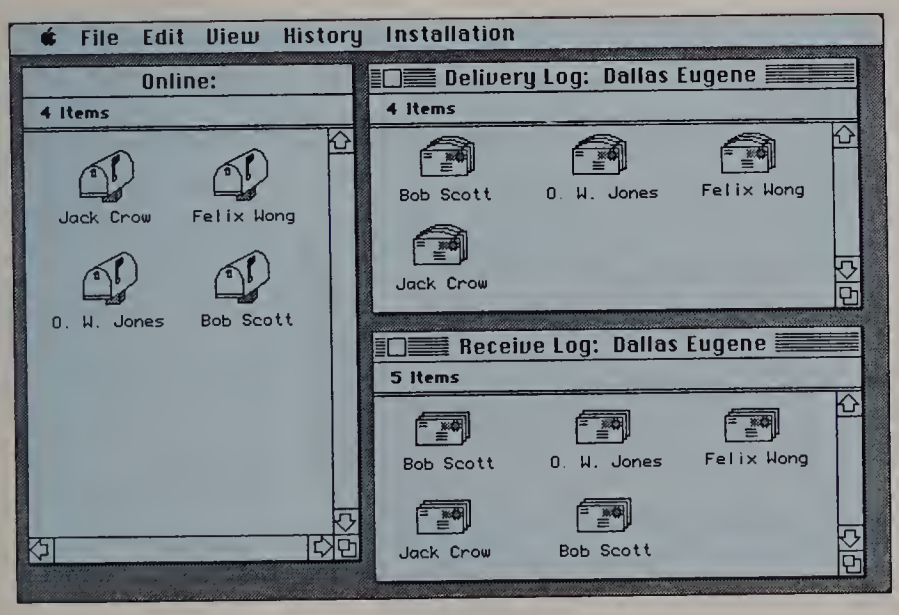

Suggested Retail Prices
Twin Pack $299
Six Pack $499

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Without mass storage that every Macintosh can access, your networked office won't have a prayer.

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So take it from us. If you're going to add people to your new Macintosh Office, add the mass storage system that everyone can use. OmniDrive from Corvus. Then your Macintoshes can really start talkin' business.

For more information, call (800) 4-CORVUS.

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David Bunnell

Tribute to a Great Friend

The computer industry has lost a powerful leader, but his influence and dedication live on

Andrew Fluegelman, a man for all seasons

Andrew Fluegelman is gone. The founding editor of both *Macworld* and *PC World* and cofounder of our company, Andrew died suddenly at age 41.

Andrew was known far and wide in the personal computer industry. The day we were notified of his death, I happened to receive an envelope from our publicity department stuffed with press clippings containing references to him.

Andrew created the notion of Freeware–a wonderful concept of sharing and marketing software–when he decided how to distribute his *PC-Talk,* the first easy-to-use yet powerful communications program for the IBM PC. The marketing technique and the program are both milestones in personal computing history and will live on for many years.

Nationally known for his software exploits, Andrew contributed to the quality and success of our two magazines in ways that can be understood and appreciated fully only by those of us who worked closely with him. While creating *Macworld* and *PC World,* we relied heavily on Andrew's writing and editing expertise, his wonderful insight and judgment, and his amazing computer skills. We trusted him implicitly.

We couldn't have done it without you, Andrew.

Literally 2 minutes after *PC World* cofounder Cheryl Woodard and I shook hands with IDG chairman Pat McGovern to clinch the agreement to start PC World Communications, I called Andrew and asked him to join us as one of the company's founders. That phone call turned out to be one of the wisest moves I've ever made.

Andrew brought us a superb sense of style. He increased our understanding of the profound importance of maintaining high standards of integrity, appropriate discretion, and absolute honesty. His brilliant reviews of IBM's *EasyWriter* and Lotus's *Symphony* were scathing, yet the people who knew him from those companies were among the friends most shocked and saddened by his death.

Just last April I had the opportunity to spend a week with Andrew in Japan. Perhaps because it was just the two of us facing the mysteries of Japan's culture and its electronics industry, I am able to bring back wonderful memories of Andrew that will always remain with me.

Andrew took to Japan the way he did to computing–like a duck to water. Though we were able to study Japanese for only a few hours on the plane, by our third day in Tokyo, he was already tossing off Japanese expressions as though he had traveled extensively in Japan. I have no doubt that if we had been able to stay for a few weeks, Andrew would have spoken fluent Japanese.

Andrew was always willing to listen. His innate courtesy helped us form strong relationships with several key people in Japan.

And throughout the trip, Andrew maintained a delightful playfulness and good humor, the same characteristics that many of his friends remember fondly.

(continues on page 16)

The hostess of a lavish masquerade ball has just been brutally strangled.

Fortunately, there's a suspect.

Unfortunately, it's you.

Just slip SUSPECT,™ Infocom's latest interactive mystery story, into your computer and suddenly you are a newspaper reporter covering the blue-blood society event of the year, Veronica Ashcroft's annual Halloween costume ball. And every decision you make will determine the story's suspenseful outcome. Suppose, for instance, that while snooping about the mansion in your cowboy costume you decide to peek in the office. You simply type, in plain English:

```
>OPEN THE DOOR
THEN ENTER
THE OFFICE
```

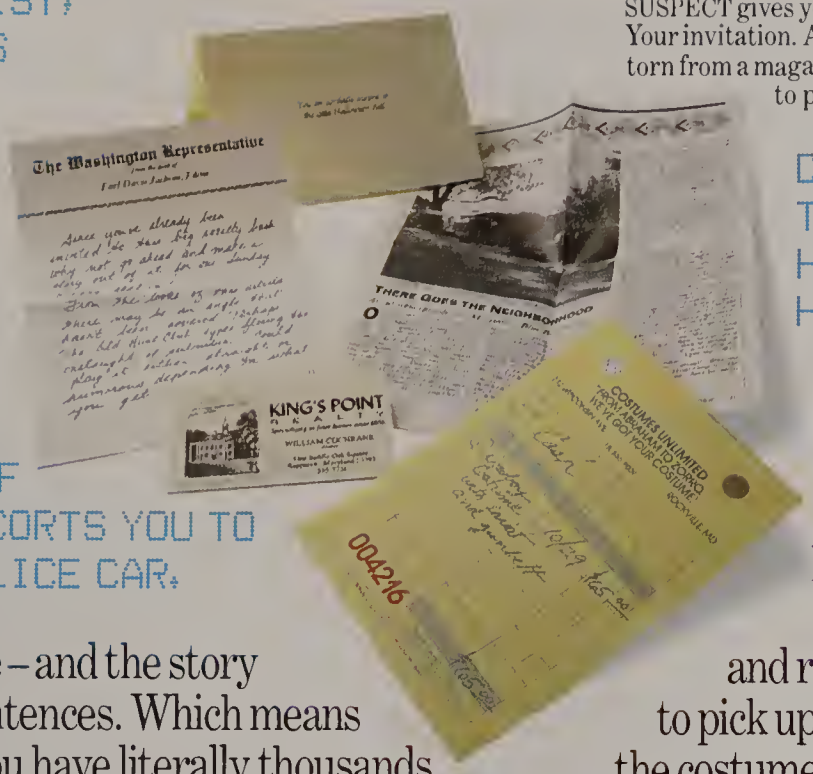
And the story responds:

```
YOU OPEN THE DOOR.
SLUMPED BEHIND THE
DESK IS THE BODY OF VERONICA
ASHCROFT. HER MASK HAS BEEN
PULLED OFF. AROUND HER NECK
IS THE AGENT OF DEATH, A
ROPE. IN FACT, IT'S YOUR
LARIAT, WHICH
YOU GOT TIRED
OF CARRYING
AROUND AND HUNG
IN THE CLOSET WITH
YOUR COAT.
```

You've been framed. And you have mere hours to discover who the real killer was. Because if you don't, you could be in serious trouble:

```
THE DETECTIVE GRABS YOU
FIRMLY BY THE WRIST, AND WITH
```

A PRACTICED TWIST, SLIPS THE CUFFS ON YOU. "YOU'RE UNDER ARREST FOR THE MURDER OF VERONICA ASHCROFT." SERGEANT DUFFY APPEARS AS THOUGH OUT OF NOWHERE AND ESCORTS YOU TO THE WAITING POLICE CAR.



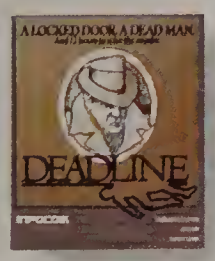
You communicate – and the story responds – in full sentences. Which means that at every turn you have literally thousands of alternatives. So if you decide it might be worthwhile, for example, to dance with Mrs. Ashcroft's corpse, you just say so:

>DANCE WITH VERONICA'S BODY

And the story responds:

YOU'LL HAVE TO LEAD, YOU CAN BE SURE OF THAT.

This masquerade ball is one bash where you'd better go easy at the bar. Because simply staying out of the slammer is a challenge that could send the soberest soul staggering.



Other interactive mystery stories from Infocom include The WITNESS,™ a 1930's style whodunit thriller in which a case of blackmail turns into murder before your eyes. And DEADLINE,™ which gives you just twelve hours to find the murderer, before he finds you.

You'll have to solve puzzle after puzzle as you build your case. You'll search for clues. Analyze evidence. Overhear conversations. You'll even question suspects:

>COCHRANE, TELL ME ABOUT SAMUEL OSTMANN

And the story responds:

COCHRANE IS UNSTEADY AND SWALLOWS A LITTLE MORE OF HIS DRINK BEFORE ANSWERING. "THAT SLIME! HE'LL GET WHAT'S COMING TO HIM ONE OF THESE

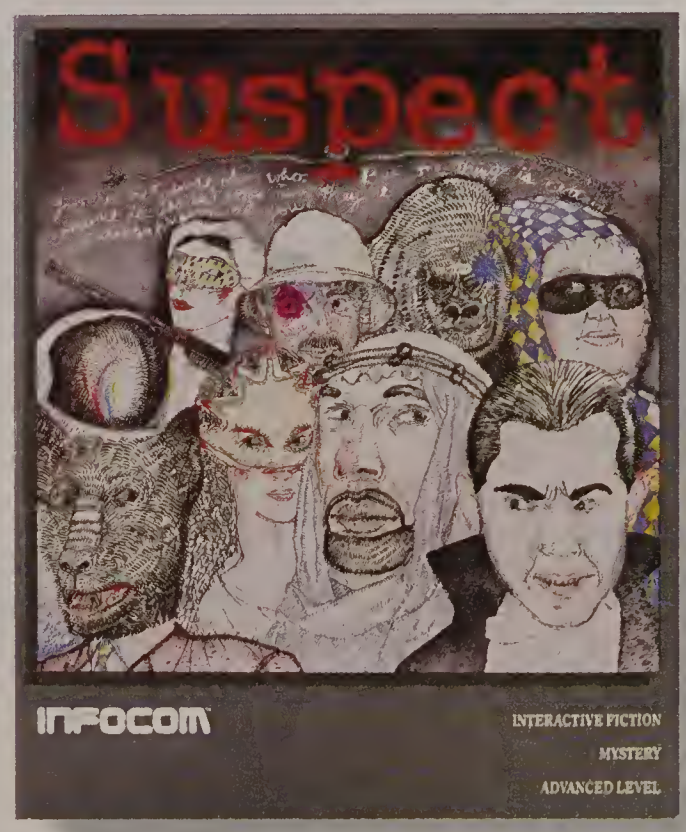
SUSPECT gives you clues even before you flip on your trusty computer. Your invitation. A cryptic note on the back of a business card. An article torn from a magazine. A receipt for your rented costume. Even a guide to proper etiquette during a murder.

DAYS, HE'S GOT AN IN WITH THE REAL ESTATE BOARD AND HE'S TIGHT WITH VERONICA. HE'S RUINING MY BUSINESS!"

And if you're clever enough, then maybe, just maybe, you'll prove your own innocence. But you'll have to hurry.

So polish up your party manners and rush down to your local software store to pick up a SUSPECT today. And remember, the costume ball lasts from 8 to 12. But if you don't solve the mystery, you'll soon be doing 18 to 20. With no parole.

Still not convinced? Try our Sampler Disk which includes portions of four different types of stories for just $7.95. If it doesn't get you hooked on the addictive pleasures of Infocom, return it for a full refund. If it does, you can apply the price toward your first Infocom story. You can't lose!



INFOCOM™

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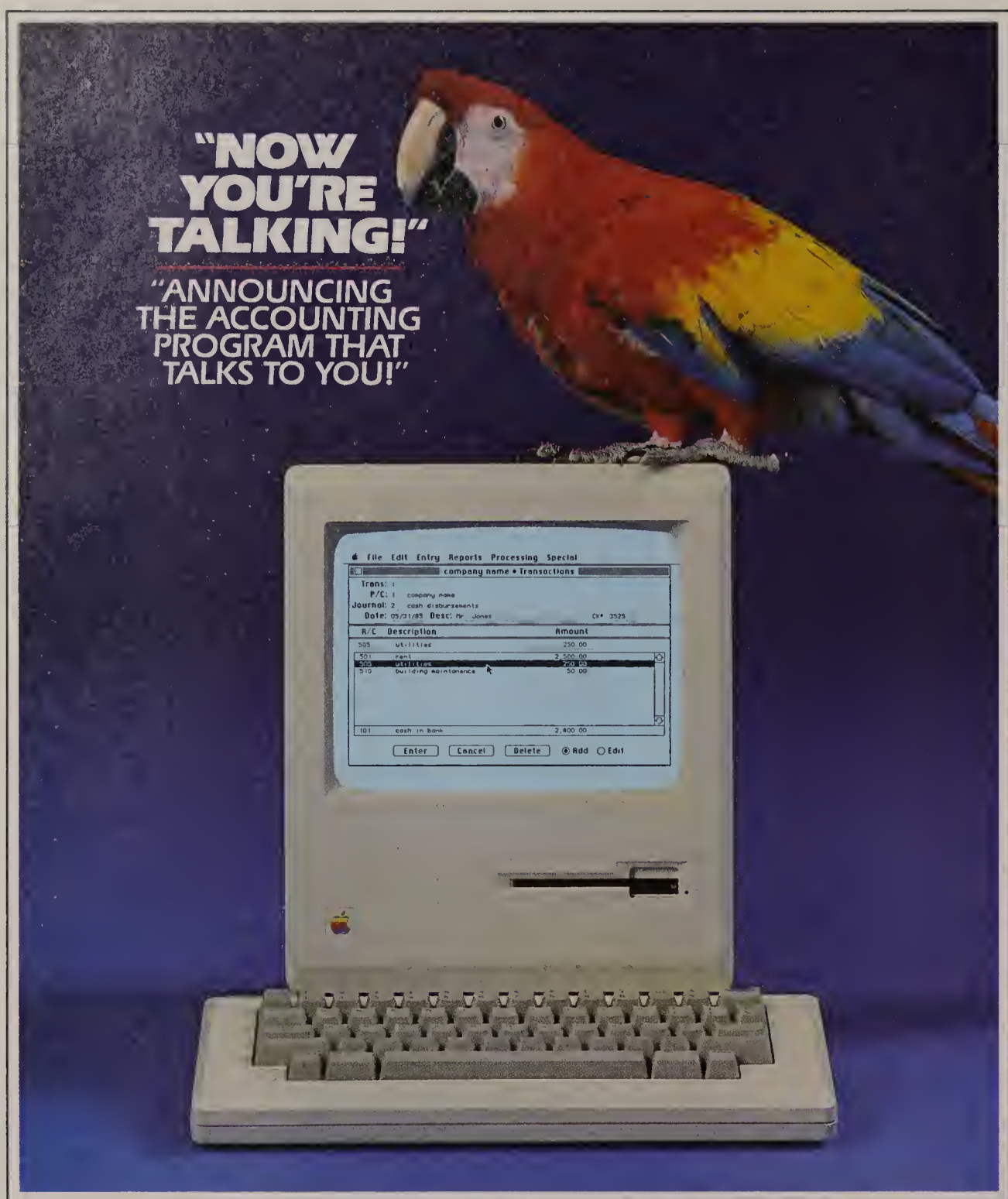

Introducing a powerful, yet easy-to-use, double-entry accounting system for business and professional users. "Strictly Business" is designed for small, medium, and large-size companies that are tired of the limitations of other programs. The General Ledger includes the following features: • The number of entries is limited only by your disk space • Multiple Profit Centers – up to 99 per company • Up to 100 departments per Profit Center • Up to 99 individualized Journals • Dollar amounts to $999,999,999.99 per Transaction • Allows 3, 4, or 5-digit Chart of Account Numbers • Provides a thorough audit trail • Allows prior-period adjustments at any time • Displays multiple windows simultaneously • A flexible Password System that allows you to create users with complete or partial access to work areas • Budgets for all income and expense account numbers • Prints up to 15 consolidated or individual reports for any period of time • Prints reports comparing the current year with your budget or the previous year • Allows you to design your Balance Sheet and Profit and Loss Reports • Can use AppleTalk™ for printing • Help Screens • Plus SmoothTalker™ for verbal alerts and column reading

"STRICTLY BUSINESS"™
ACCOUNTING SYSTEM
MODULE ONE: GENERAL LEDGER

The General Ledger is the first of seven modules including: Accounts Payable, Accounts Receivable, Payroll, Job Cost, Inventory Control, and Order Entry.

For more information, just give us a call. We'll talk to you.

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David Bunnell

(continued from page 13)

For instance, as we drove back to the train station after visiting the Yamaha factory in Hamamatsu, Andrew noticed a sporting goods store with Japanese baseball caps in the window. Even though we were in danger of missing our train–and therefore our return flight to San Francisco–Andrew had the taxi driver pull over to the side of the busy road. Together with our guide, Yasuo Ohira, we dodged the traffic to run into the shop. After quickly trying on caps and buying some, we rushed back to the taxi. We ended up having to charge up several flights of stairs to catch the train. But it was worth it. Once on the train, Andrew, the baseball caps, and I received long stares from the locals, who thought we were *gaijin,* American baseball players who play on Japanese teams.

A man of many talents and interests, Andrew led an incredibly full life. He loved the Grateful Dead, sushi, football, and kayaking on the San Francisco Bay. But baseball, in the form of the San Francisco Giants, was his consuming passion. Once he told me that if he were disabled and had to spend the rest of his life in a wheelchair, I should just roll him out to the ballpark, and he'd be happy.

As a self-appointed historian of personal computers, I intend to ensure not only that Andrew's contributions are remembered, but that they continue to make an impact on the industry. For this reason I have asked some of Andrew's friends and colleagues to help establish an annual Andrew Fluegelman Award.

(continues on page 20)

A • FOUR • STAR • MENU

DINNER AT EIGHT

Chefs of the nation's finest restaurants offer this ultimate collection of their favorite recipes, step by step—from shopping list to wine list!

Ah! Dinner at Eight. A two-disk system offering instant access to the delectable recipes of the country's finest restaurants. From New York City to San Francisco, master chefs reveal their secrets—with room for you to enter your own "house specials."

Select your menu from ours. Dinner at Eight lists hundreds of dishes, complete with preparation times. Select an entire menu and print a single shopping list of ingredients, automatically calculated for a single serving or any number of people. And may we suggest a companion wine with your meal?

Dinner at Eight. Bon appetit!

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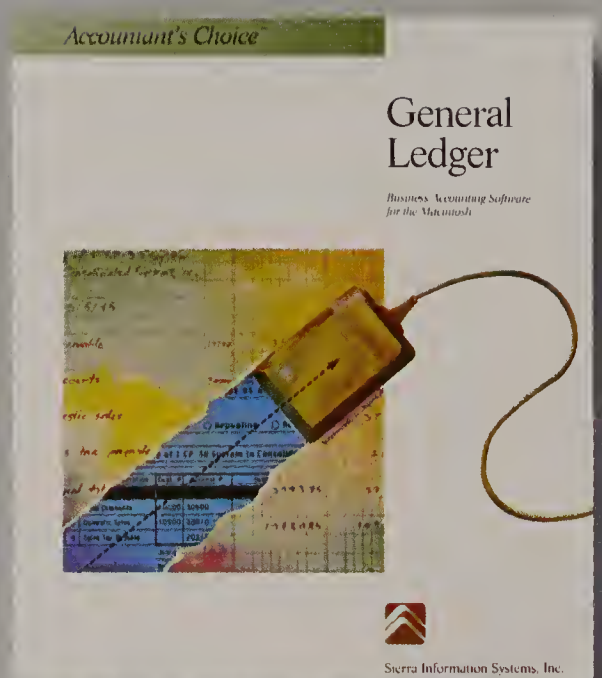
A STARCOR PACKAGE

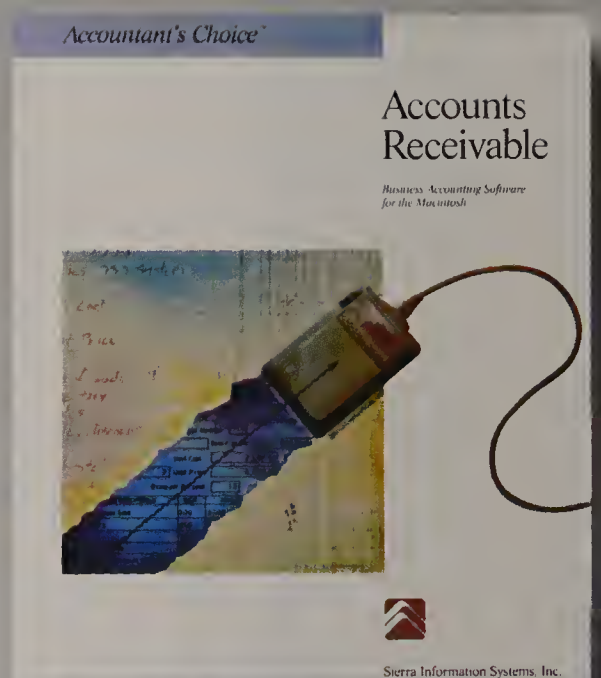
RUBICON
PUBLISHING

Circle 348 on reader service card

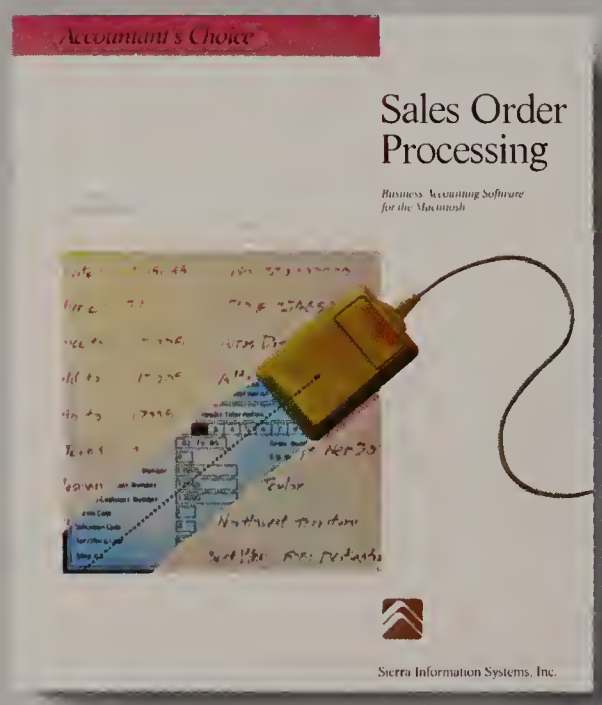
Account



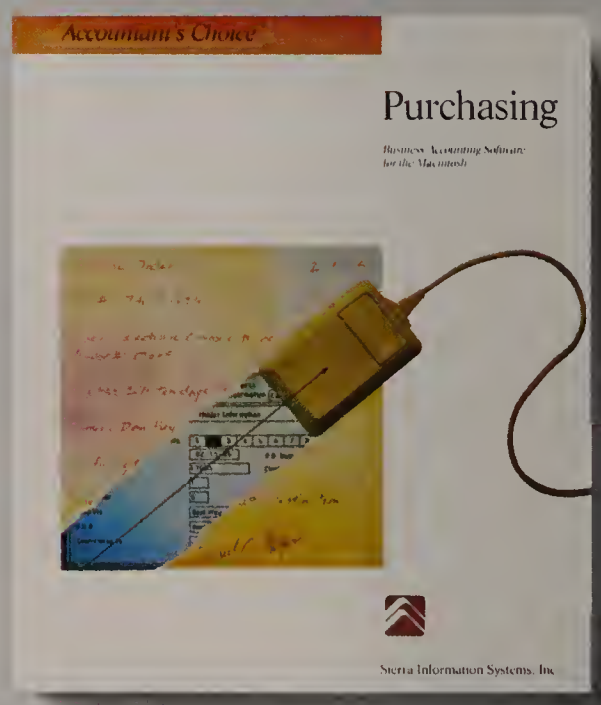
General Ledger commands a heavyweight host of tasks from journal entry to prior postings and custom financial statements.



Accounts Receivable encompasses activity like invoice entry, editing and printing, customer account inquiry and monthly reconciliation

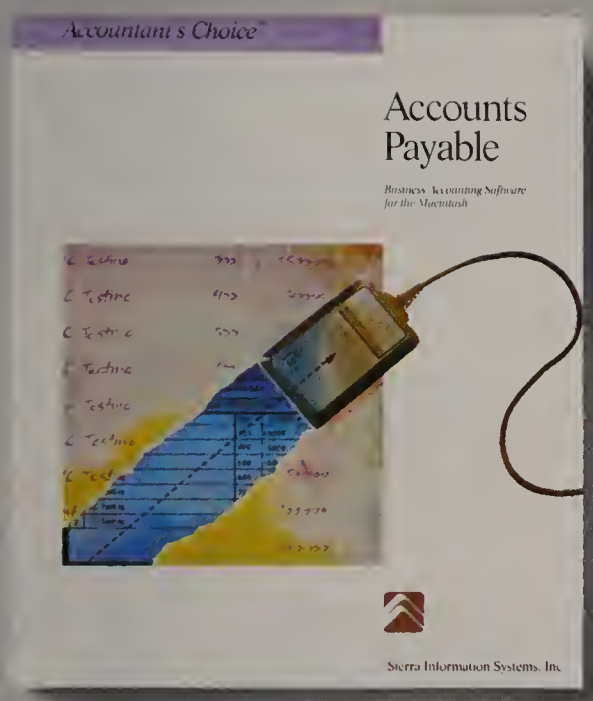


Sales Order Processing allows for sales order entry, booking adjustments, editing and inquiry, shipping confirmations and more.

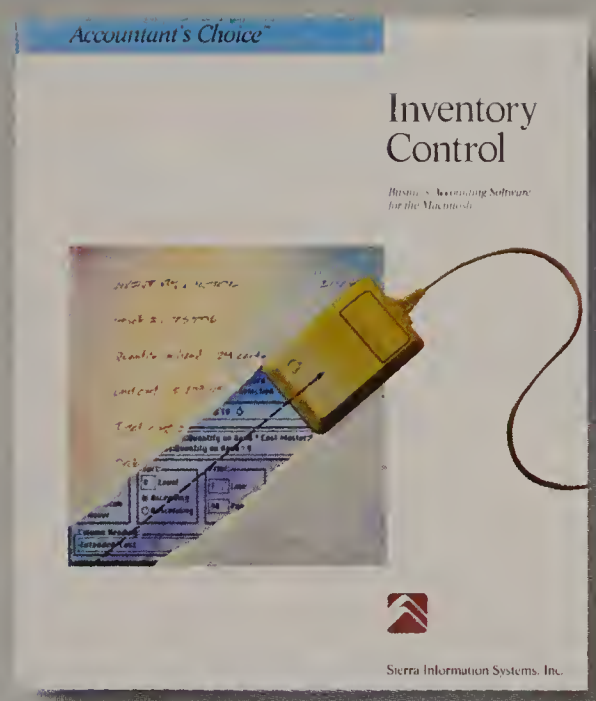


Purchasing puts a few services in perspective like QC receipts and receipt adjustments, vendor listing and analysis, and monthly transaction reports.

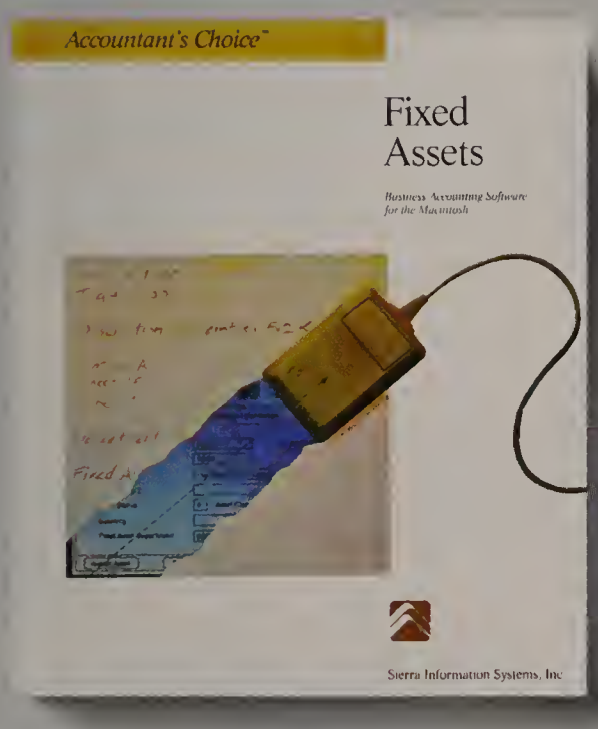
Ability.



Accounts Payable includes vendor account inquiry, debit memo entry and complete pre-closing monthly reconciliation among its many talents.



Inventory Control performs physical inventory processing, cycle count processing, stores account transfers and then really gets down to business.



Fixed Assets shows you depreciation calculation or fixed asset entry or asset retirement and transfer. Definitely comprehensive, very complete.

You're looking at business accounting software written specifically for the Macintosh.™ And specifically for the small to mid-size company.

Introducing the very appropriately named Accountant's Choice.™

Inside Accountant's Choice, you'll find general ledger, accounts payable and receivable, sales order processing, fixed assets, purchasing and inventory control.

With Accountant's Choice backing you up, your mouse can fluidly and simultaneously bring up multiple accounting functions within different windows. You can, for example, bring up an accounts receivable function on one window and accounts payable on another, enter information in accounts receivable and immediately switch to accounts payable.

And that's just for starters. To see how to make a Macintosh the, ahem,* Apple of your accounting eye, simply call your local computer dealer or Sierra Information Systems, Inc. at (408) 725-3200.

We'll show you just how accountable our software really is.

** Really not necessary to read, a slight clearing of the throat will suffice rather nicely.*

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"One picture is worth a thousand words."

Now if you could only find that picture.

Introducing Picture-Base™

The new way to store, organize and retrieve pictures.

Picture-Base works with your other applications to let you create a library of pictures. With Picture-Base, you can copy all or part of a drawing into the library and then with a simple click of the mouse, retrieve it.

No longer do you have to play hide and seek with disks full of MacPaint™ or MacDraw™ documents. Instead, Picture-Base's search feature makes finding a picture easy. In seconds, there it is, ready to paste into your work. And there's even an Info feature which allows you to store text with each picture in the library. And best of all Picture-Base costs only $48.00.

Also available: QuickDisk™ - the RAM disk software that makes your Macintosh™ 512K up to ten times faster. Only $34.00

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Circle 303 on reader service card

David Bunnell

(continued from page 16)

This award, which we hope will include a substantial cash prize, will be presented to the software author whose work best exemplifies outstanding programming and shows dedication to furthering the personal computer community. If you would like to make contributions or help participate in creating the Andrew Fluegelman Award, please write me in care of this magazine.

The people who worked with Andrew, read his articles, or continue to use his communications program gained a lot from him. And with a little help from his friends, Andrew Fluegelman and the example he set for all of us will live on among personal computer users, the industry, and perhaps even humanity.

We're going to miss him. □

HYPERDRIVE
ANNOUNCES
THE
LIBERATION
OF 400,000
MICE.

This message is for the several hundred thousand people who bought a Macintosh because of its user-friendliness—and then found it a bit slow in expressing its affections.

For those who find themselves frequently feeding floppies. And waiting. And wishing the Macintosh's capacity for work matched its appetite.

For all those who've learned to live with these and other limitations, we're pleased to announce a richly rewarding un-learning experience.

INTRODUCING HYPERDRIVE 20. TWENTY MILLION BYTES. NO WAITING.

HyperDrive 20 is a new internal hard disk that, when installed in your Macintosh, makes it the World's Fastest Macintosh.

Up to 15 times faster than a conventional Macintosh that runs on floppies. And even faster than the previous title-holder, the original HyperDrive, whose speed has been accurately described as awesome by those not easily awed.

("Using a HyperDrive compared to a regular Macintosh," wrote Personal Computing magazine, "is akin to cooking with a microwave oven instead of a gas range.")

In fact, a Macintosh with HyperDrive 20 concedes nothing in performance to an IBM XT—and still retains all the user-friendliness that drove you to Macintosh in the first place.

This rather heady level of performance may be attributed to a simple principle of engineering: Macintoshes, like human beings, travel faster and better when they're unencumbered by excess luggage.

Unlike all other hard disks, which are external, HyperDrive fits snugly inside your Macintosh and connects directly to its microprocessor. An arrangement that's not only tidy but ingenious.

It leaves both ports free, making unnecessary any painful choices between peripherals (such as a modem or printer) and a hard disk. It also gives HyperDrive an insurmountable lead over external disks—which, since they have to slow down to talk through one of the Macintosh's ports, will forever lag behind.

But speed (or the lack of it) is only one constraint you'll no longer be constrained by.

A FAREWELL, OF SORTS, TO FLOPPIES.

The HyperDrive 20 disk holds as much as fifty floppies (twenty megabytes). And if it holds them, you won't have to.

To begin with, you don't even need a system disk to start your Mac, so you can start in about a quarter of the time you might be accustomed to.

Nor will you find yourself constantly trading floppies with your Mac. HyperDrive 20's elephantine memory makes such exchanges vastly fewer and farther in between. And nowhere will that be more apparent than if you use (or would like to use) an Apple LaserWriter.

With HyperDrive, a LaserWriter will let you use more fonts, change fonts more rapidly, create longer documents, print them more quickly—and do it all without requiring you to constantly nurse your Mac through the operation.

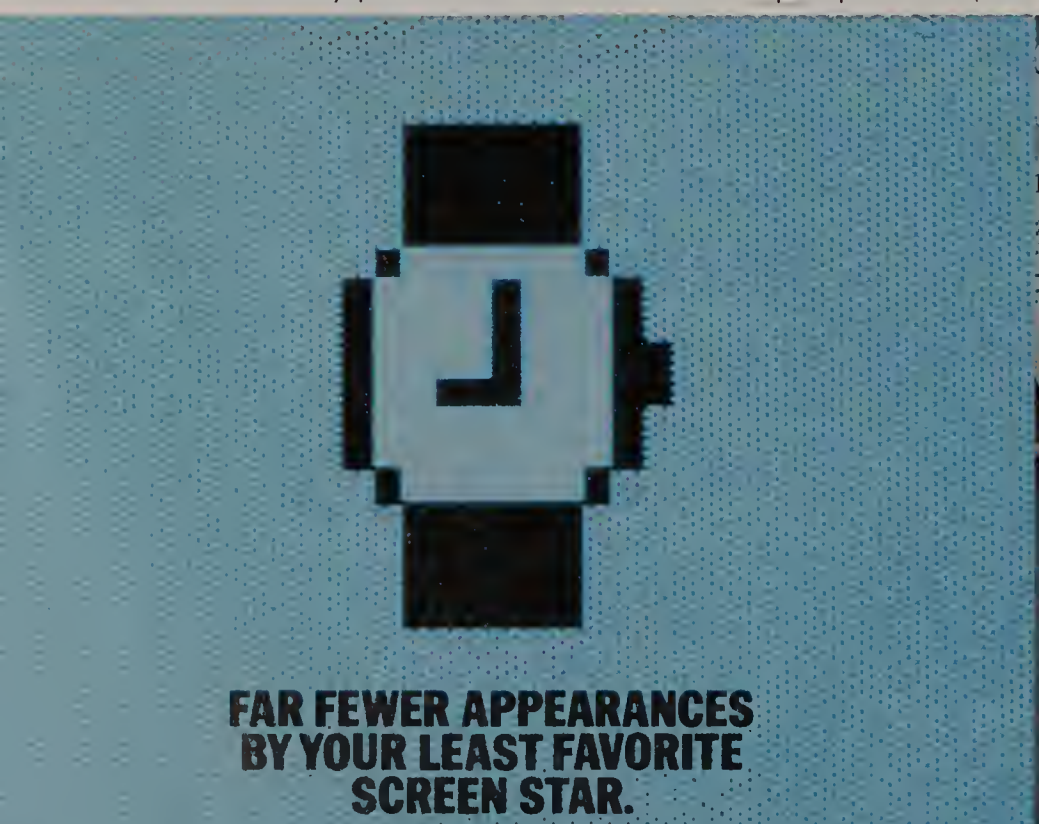
But besides holding more information, HyperDrive manages it more intelligently.

It recognizes, for example, that files are organic creations, with a tendency to grow with their own special urgency to their own self-determined size. HyperDrive is engineered accordingly.

It lets you divide your disk into 32 file drawers, each holding up to 512 files. These files automatically re-size, swelling or shrinking according to what you put in or take out. Which lets you use storage space according to your dictates, instead of your computer's.

POWERFUL ENOUGH FOR POWERFUL SOFTWARE.

HyperDrive 20 will run all Macintosh programs, including Apple's new Switcher. And it will run them



FAR FEWER APPEARANCES BY YOUR LEAST FAVORITE SCREEN STAR.

MANAGE HUGE AMOUNTS OF INFORMATION, INSTEAD OF HUGE AMOUNTS OF FLOPPIES.

VAST DIFFERENCES IN PERFORMANCE.

A TINY DIFFERENCE IN APPEARANCE.

faster. (In fact, it will even load them faster, up to 5 times as quickly.)

But HyperDrive 20 will also run programs that the regular Macintosh, for all its friendliness, lacks the sophistication to handle effectively.

Programs such as Lotus' Jazz, for example. And Microsoft's Word. Powerful business software that can multiply a Macintosh's performance and productivity.

HyperDrive 20 also comes with its own software that elevates both the friendliness and the sophistication of your Macintosh.

A Security program protects your files by encrypting them so they'll be unintelligible to everyone who doesn't know your decrypting password.

A backup program, unsurprisingly named Backup, lets you back up and restore information from the hard disk to and from your floppies.

There's even a print spooler that lets you use your Mac for other jobs while your printer is churning out the one you just finished.

A REASSURANCE AND A USER-FRIENDLY WARNING.

For all its emancipating qualities, there's one item that HyperDrive won't liberate you from.

The Apple warranty.

Even though your Macintosh must be opened (by an Apple dealer) to install HyperDrive, your warranty remains intact. But Apple won't be the only one watching over you.

HyperDrive is further backed by our own 90-day limited warranty and an optional HyperCare extended service contract. And service is available at participating Apple dealers nationwide. (See your dealer for complete warranty details.)

In fact, the only imaginable problem left unattended by HyperDrive is that of deciding which to buy —HyperDrive 10 or HyperDrive 20.

That will depend largely on how much capacity you need: vast or twice as vast. And that's an issue everyone will ultimately have to decide for himself.

Fair warning, however, should be taken from the words of Personal Computing magazine: "HyperDrive spoiled us—utterly, completely. It now appears that there's no turning back..."

Those still willing to risk disenchantment with every other Macintosh system are invited to a HyperDrive demonstration at a participating Apple dealer. Or call us at (800) 422-0101 or (617) 492-5500. In Canada, call our distributor at (800) 565-1267.

GENERAL COMPUTER

The leading edge starts here.

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I'm
IBM
Compatible

Two-for-one special.

Tired of the perplexing decision about which desk-top computer to buy?

We don't blame you. On the one hand, there is the sophistication, power and advanced technology of the Macintosh. On the other is the IBM PC and its library of almost 10,000 software programs.

So which computer should you buy?

MacCharlie from Dayna Communications offers an easy answer. Because with MacCharlie, your Macintosh now becomes compatible with IBM PC software.

What's more, MacCharlie actually enhances IBM PC software. For instance, because your Macintosh menu bar and window sizing are still active with the mouse, you have use of options like the clipboard, calculator and notepad with IBM PC software.

And through MacCharlie, you can link Macintosh to IBM serial networks and mainframes. Data files are also transferable from Macintosh to IBM and vice versa.

So even if you've taken the plunge into IBM's world, you can now advance to Macintosh and still keep your software library intact.

In short, you can have your Macintosh, and IBM PC software too. Thanks to MacCharlie, the best of both worlds.

MacCharlie™
by Dayna Communications

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Introducing

QUICKWORD™

The First Product for the Macintosh that Dramatically Reduces Your Typing Time...Even If You Don't Type!

Quickword is a remarkably powerful word processing expander that sets MacWrite™ or Word™ on its ear while saving you lots of time!

Now typing 2,4,6-Dimethylbenzoxide, "For the party of the first...," or "Sincerely yours," can be as easy as typing an A, B or C. Quickword lets you create multiple abbreviations tables for phrases of up to 50 characters. Whether speed typed or thoughtfully entered, Quickword will translate your abbreviations "on the Fly" into their full meaning within your documents.

So if you're interested in cutting your typing time in half, see your authorized Apple Computer dealer today. You'll wonder how you ever got along without it.

Requires a 128K, 512K or XL Macintosh
Price: $59.95

Introducing

QUICKPAINT™

The amazing MacPaint™ expander that will never leave you at a loss with pictures.

Quickpaint™ lets you browse through entire volumes of MacPaint™ drawings in minutes rather than hours. Simply use Quickpaint's™ "miniview" feature to locate any of the drawings that come with Quickpaint or to find drawings from any other popular clip art product. Then blow it up for full screen viewing and editing. You can cut, paste, edit and erase selected parts or copy the entire picture into other drawings or documents. And Quickpaint™ does this all from whatever application you're working in!

To see how Quickpaint™ can help enhance the state of your art, stop by your authorized Apple Computer dealer today. You'll wonder how you ever got along without it.

Requires a 128K, 512K or XL Macintosh
Price: $49.95

For the name of your nearest Quickword™ or Quickpaint™ dealer, or to order, call (1-800) 621-0851 x305 (8a.m. - 5p.m. PST).
For more information call (415) 543-7644.

EnterSet™ Inc. 410 Townsend Street San Francisco, CA 94107

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Letters

Meager Marvel
I was pleased to see you review programs for pasteup and design work ["Publishing Turns an Electronic Leaf," *Macworld,* July 1985]. I bought my Macintosh for that reason. I wanted to spend time puzzling over the layout of my work, not puzzling out the mechanics of the computer.

I bought *MacPublisher* more than a month ago. It was the only program of its type advertised as compatible with the 128K Mac. Since I received it, it often bombs with a system error. Whenever that happens, I must restart the Mac and lose whatever I was working on. If I assemble more than one or two pages of material, it will not print. When I called Boston Software for help, I was informed that system errors on a 128K Mac are not unusual. The suggested solution was to limit my documents to two pages, as I had been doing.

MacPublisher is a marvelous program. It is one of the easiest programs of its type, and considering its price, I couldn't ask for much more. I am disappointed, however, that Boston Software advertises its product for the 128K Mac when the company knows the product runs properly only on a 512K Mac.

Martin Wixted
Danbury, Connecticut

Makeup Alternative
Apparently you don't consider T/Maker Graphics' *ClickArt Publications* a page-makeup program ["Publishing Turns an Electronic Leaf," *Macworld,* July 1985]. The program may not be as convenient as a $500 cut-and-paste program, but at $49.95 *ClickArt Publications* is a lot cheaper.

Publications requires *MacPaint,* but if "Late-Night Layout" [in the same issue] is an example of what's aesthetically possible with *MacDraw,* I'll stick with *MacPaint.* I thought the comparison test among the page-makeup programs was interesting, but the nocturnal newsletter article was boring.

Joe Farace
Denver, Colorado

ChipWits Makes the Grade
As a programmer and manager of programmers, I am vitally interested in the training of computer programmers. Sharon Zardetto Aker's review of *ChipWits* ["Mr. CW in ChipWit Caves," *Macworld,* July 1985] leads one to conclude that the game is unsuitable for introducing computer programming. In particular, Aker implies that the language used (IBOL) is so unlike conventional languages that it is useless for education.

Two issues are raised. First, IBOL uses stacks, which Aker says are "not consistent with methods of memory management used in the higher-level languages taught in schools." Second, Aker considers it a drawback that IBOL programs tend to have a great deal of decision-making steps compared to the number of data manipulation steps.

Understanding the power of the stack is crucial to understanding recursion, which is used in most widely used high-level languages, such as Pascal, C, FORTRAN-77, Ada, LISP, APL, and some versions of BASIC. Recursion requires a stack-based argument/return address discipline. Recursive algorithms are simple, fast, and direct–perfect educational tools.

Regarding the second issue, Aker implies that *ChipWits* programs are too complex. I think this is a benefit, not a liability. Complex branching criteria are required to write programs with decisions and loops. Training in the correct design of complex algorithms is far more beneficial than training in the design of simple computations.

Despite Aker's reservations and based on her otherwise excellent review, I may buy *ChipWits* to aid beginning programmers. It seems a well-designed, nonthreatening introduction to a fascinating discipline.

Steven F. Lott
Syracuse, New York

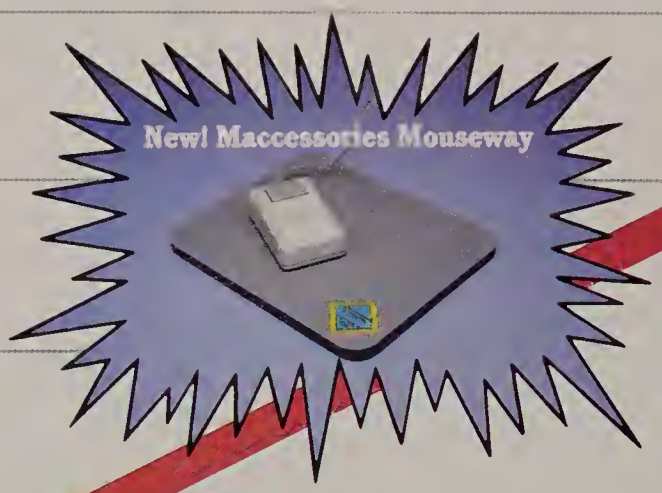
Mr. CW's Neighborhood
As president of Brainpower, I'm writing in response to your review of our *ChipWits* program ["Mr. CW in ChipWit Caves," *Macworld,* July 1985]. The primary purpose of *ChipWits* is the development of the analytic skills used by a programmer in developing software. *ChipWits* addresses attributes of program development–such as instruction sets, sequence of instructions, and conditional testing–common to all computer languages. At the same time, *ChipWits* is entertaining.

The reviewer indicates that the documentation has deficiencies. Version 1.1 was released in April and contains a completely rewritten manual, some minor bug eradication in the magnetic media, and new packaging.

The reviewer raises a substantive philosophic issue but treats it as a self-evident conclusion when she writes, "While the game's philosophy may be to learn by doing, no one

(continues on page 30)

Maccessories® 16 ways to improve the performance of your Macintosh.™



Maccessories from Kensington Microware—an entire family of products to enhance your Macintosh. Maccessories make your computer more convenient. They increase your system's flexibility. And they protect your investment.

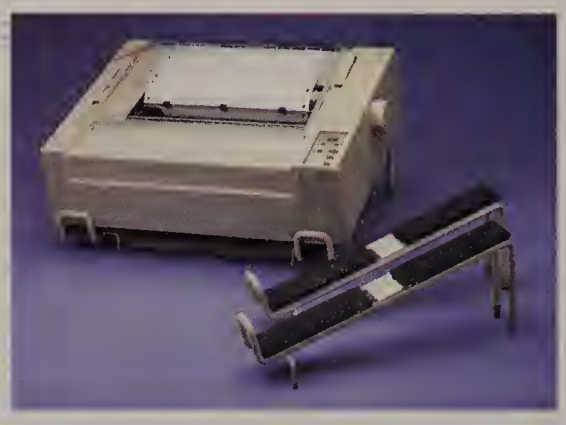
1 Control Center

Organizes all your power needs. Styled to fit underneath your second disk drive, it provides fingertip control over your whole system. There's a master switch to power the whole system on and off, and individual switches for a printer, modem and one auxiliary device. And Control Center protects your entire Macintosh system from damaging power surges, line noise and static shocks.

2 Surge Suppressor

Portable protection for a travelling Macintosh. Surge Suppressor replaces your power cord, providing UL listed surge suppression and line noise filtering. It's light and fits easily into your carrying case.

3 Universal Printer Stand

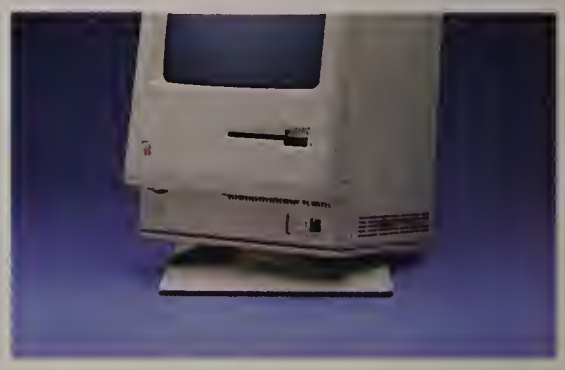


Raises your Apple® Imagewriter® at a slight angle so you can monitor its performance more easily. It solves the problem of where to store paper—several hundred sheets are accommodated neatly underneath. (Also fits most other dot matrix printers.)

4 A-B Box

If you want to take advantage of the AppleTalk™ network, a LaserWriter™ printer or a hard disk in addition to your Imagewriter and modem, you'll have three peripherals competing for the two serial ports on your Macintosh. The A-B Box gives you the extra serial port you need. Just plug two of your peripherals into the A-B Box and plug the Box into one of your Macintosh serial ports. Then simply divert your data output to the peripheral of your choice—press A to send to one, B to the other. Fits perfectly underneath your external disk drive.

5 Tilt/Swivel



Gives you the flexibility to tilt and swivel your Macintosh to the viewing angle most convenient for you.

6 Polarizing Filter

The solution to a glaring problem. Made exclusively for Kensington by Polaroid® it protects your eyes by reducing reflected screen glare by up to 99%. Also improves screen contrast. Easy to install.

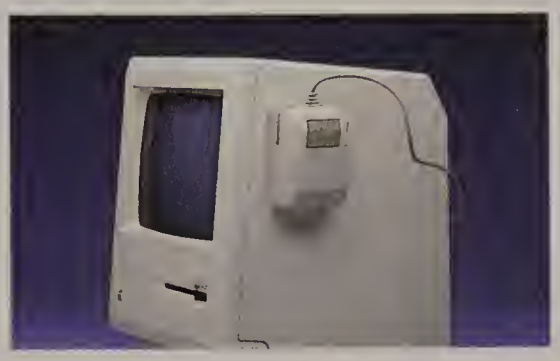
7 Disk Case & Disk Pocket

Provides safe storage for 36 Macintosh disks. Comes with a packet of spare disk labels. Also includes a handy Disk Pocket for safe transportation of up to 5 disks.

8 Dust Covers

Protect your system from the elements. Anti-static dust covers for Macintosh, Macintosh XL, Image - Writer and External Disk Drive.

9 Mouse Pocket



A safe, clean place to keep your Mouse when not in use. Attaches to the side of your Macintosh. Fits under the Maccessories Dust Cover.

10 Mouse Cleaning Kit

A full year's supply of the cleaning materials you'll need to keep your mouse rolling at top speed. Also includes the Mouse Pocket.

11 Disk Drive Cleaning Kit

A full year's supply of the cleaning materials you'll need to keep your drives running smoothly.

12 Graphic Accents

A collection of over 250 professional illustrations, covering everything from business to holidays. Use them for reports, newsletters or greeting cards. Graphic Accents are stored in standard MacPaint™ files, for ease of use.

13 Professional Type Fonts

Styled after the most popular type faces in the publishing industry. Type Fonts for Text contains 16 fonts in sizes 12 to 24 point. Type Fonts For Headlines (for the 512K Mac) contains the same fonts in sizes 24 to 72 point. Including versions of Times Roman, Helvetica, Optima, Futura, and a dozen others.

Also available:

14 Swivel

15 Portable Modem

16 Travelling Disk Case

For more information, contact Kensington Microware, 251 Park Avenue South, New York, NY 10010. (212) 475-5200. Tlx: 467383 KML NY.

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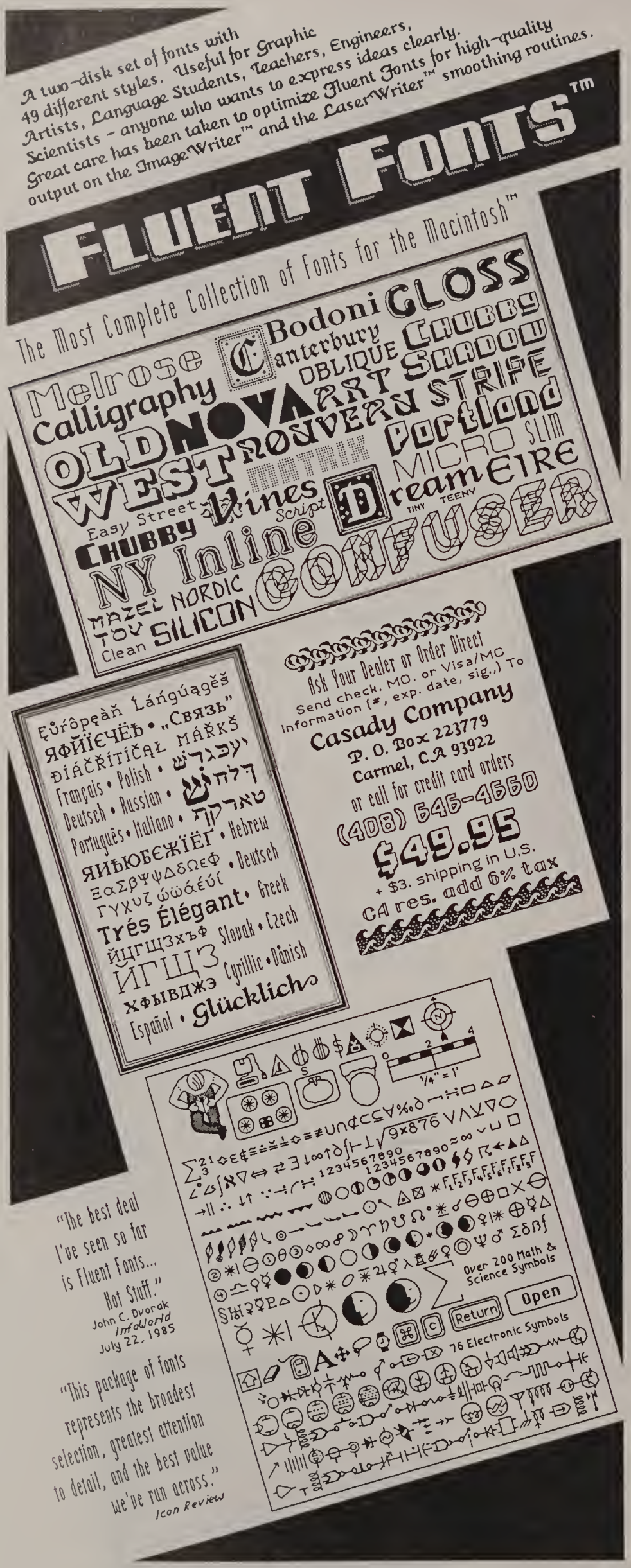
Circle 11 on reader service card



Circle 165 on reader service card

(continued from page 27)

should have to play a game to figure out how it should be played." If education is seen as filling addresses in wetware (the human brain) with data available for recall, the reviewer is quite correct. If instead we see instruction as a means of developing new and divergent problem-solving tools, then the challenges *ChipWits* presents are consistent with that goal. In any event, the issues are complex and deserve more than a throwaway line.

Sherwin A. Steffin
Calabasas, California

Sharon Zardetto Aker replies: I have no arguments with Mr. Lott's comments about the use of stacks. However, for a beginner to have no alternative to stack memory—no numeric variables, no control variables for loops—is a less-than-realistic introduction to programming.

Regarding Mr. Lott's second point, ChipWits *prevents the player from making simple designs while in the learning stage, which I feel is a liability in a program positioned to serve as an introduction.*

In response to Mr. Steffin, I stand by my statement regarding ChipWits' *learn-by-doing approach. I was not raising a philosophical issue but complaining about the poor documentation. Despite the "edu-speak" at the end of his letter, Mr. Steffin notes that the manual has been completely rewritten.*

Hey Britannia!

Lon Poole had better inform the British Apple dealer pictured on page 160 of your July issue that external drives shouldn't be on top of Macintoshes. According to Poole's *Get Info* column in the same issue, stacking drives topside is not a healthy practice.

Betty J. Dorsey
Lawrence, Kansas

Lividly Losing Lisa

The clamor for a hard-disk Macintosh confuses me. I can understand a Mac owner wanting a "factory" hard disk, but the Lisa and the Macintosh XL are hard-disk computers. Not once have I seen a mention of this fact in your magazine. Just in my novice period with the Lisa, I've come to love its hard disk. I can't imagine having a computer without one. For my small business, adding to a Macintosh to build a business system could be nightmarish.

Don't mistake my feelings about either the Macintosh or Apple Computer. I have every hope (rather, no choice) to expand my system with Macintosh units, married to the Lisa, of course.

The "new" *MacWorks* software for Lisa has been promised for a long time but still hasn't arrived. The conversion chip to solve the screen distortion has never arrived either. As far as I know, no Macintosh software is compatible with Lisa's 7/7 business system. It's a shame that such a tremendous work horse is shunned by magazine and manufacturer alike. The child Lisa bore is its demise.

Dave Holeman
Montrose, California

Buyers Be Aware

My employer has provided an IBM PC XT for my use at work. I have a 512K Macintosh at home. Although thousands of programs are available for the PC, the several hundred for the Mac cover the bases and are far superior in implementation. It is a shame that corporate buyers continue to buy PCs for their employees who, in our case at least, don't like the machines. I suspect that indi-

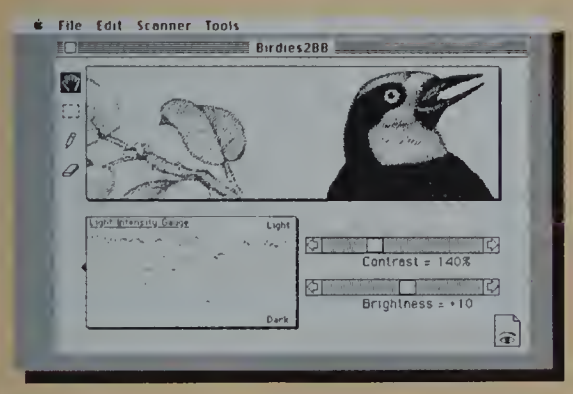
(continues on page 34)

Hertzfeld on ThunderScan™

After three years on the Macintosh development team, Andy Hertzfeld began to work on the software for an easy-to-use, low-cost way to put images into Macintosh. The result: ThunderScan.™ The high-resolution optical scanning device that turns the ImageWriter printer into an image reader. Recently, Andy shared some thoughts on the product he's dubbed, "MacPaint for the rest of us."

"...I was incredibly thrilled. I knew it would blow people's minds."

"I spent over three years developing Macintosh's operating system. I care a lot about Mac and wanted people to be able to use it to its full potential. But how do you get images into the machine? Most people can't draw. That's why I got involved with ThunderScan. To give people, especially non-technical users, an easy, low-cost way to get high-resolution images into Macintosh. When I first saw how beautiful ThunderScanned images were, I was incredibly thrilled! I knew it would blow people's minds."



ThunderScan's image processing tools let you enlarge, reduce, cut, paste, select, draw, scroll and erase, as well as control contrast, brightness and half-toning.

"You get to make artistic decisions. To change and improve what you see."

"Macintosh inspires creativity. ThunderScan is a vehicle for its expression. It lets you put any printed image into Mac. But you're never stuck with the image as is. You get to make artistic decisions. To change and improve what you see. You can control the contrast, brightness and half-toning. Over all or just parts of the image. Even create reverse images and outlines. It's really fun. But the great thing is, when the novelty wears off, you have a useful tool.

"ThunderScan has a whole range of applications. Some people use it for inserting graphics into newsletters and reports. I know a fine artist at Stanford who makes collages with it. I use it a lot, too. The way I write a program is an expression of who I am, so in my new "Switcher" program, I included a ThunderScanned image of myself."

"...With LaserWriter you can create unbelievably exquisite images."

A scanned image is just the start. Now you have micro-control over 32 shades of gray to enhance all or part of the image as you please.

"We now have an enhanced version (available as a software upgrade for current users) that has some neat new features. It supports AppleTalk, the wide-carriage ImageWriter and LaserWriter. The output resolution of LaserWriter and ThunderScan's input resolution are a perfect match. So with LaserWriter you can create unbelievably exquisite images.

"ThunderScan is a complete imaging system. You don't have to buy anything else. You just snap out ImageWriter's ribbon cartridge and snap in ThunderScan. It fits in any office or home environment, takes up no space and the lighting is always perfect.

"Developing ThunderScan was a lot like developing Macintosh. We were doing something for the first time. Making an important tool. We think we did a good job."

ThunderScan requires 128K. But to take full advantage of all its features, you'll need a 512K Mac.

Available now through computer retail stores or directly from Thunderware for just $229. To order or for more information, call today (415) 254-6581. Thunderware,® Inc., 21 Orinda Way, Orinda, CA 94563.

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ThunderScan™

Circle 167 on reader service card

More Power To The Macintosh.

Introducing Crunch™.

It has all the features that every spreadsheet user could use. On a computer that anybody can use.

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Anybody can use Crunch's unique icons to streamline spreadsheet functions such as graphing and printing, so working with numbers can be faster and easier than ever before.

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Anybody can use Crunch's special macros to automate repetitive tasks such as updating and revising financial reports.

And anybody who has Multiplan® and other program files can convert them to Crunch.

If you can find all this in any other spreadsheet that retails for just $295*, more power to you.

See your local Paladin dealer for your free Crunch trial size disk.

Paladin™

*Suggested retail. Macros capability contained in Crunch version 1.5. Crunch version 1.0 purchasers can obtain a free upgrade by sending in their registration card.

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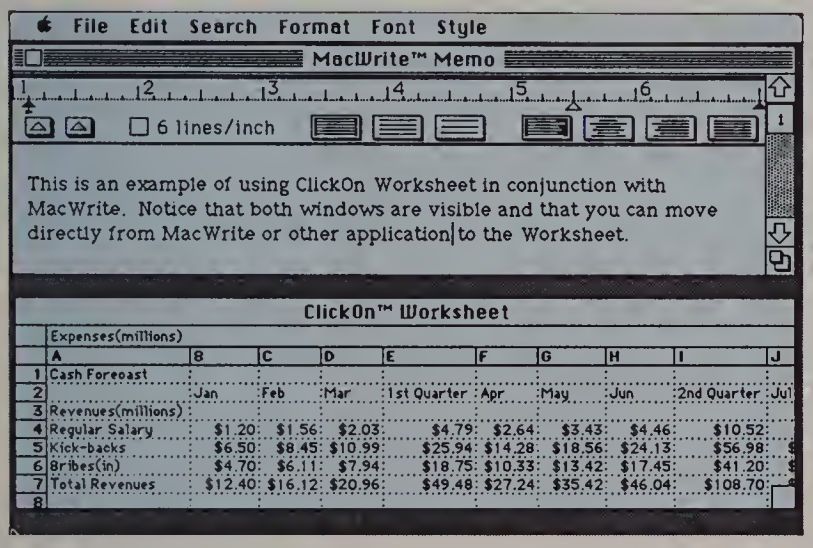
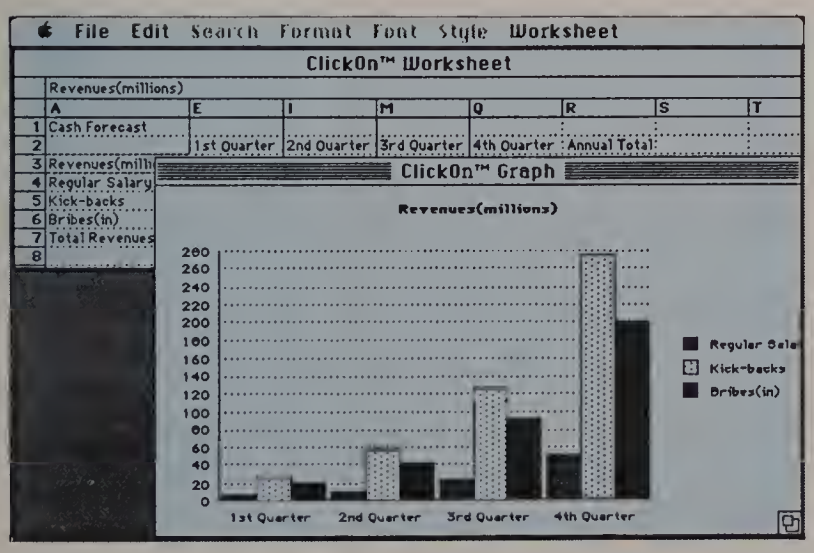
Let's say you're in MacWrite. Without leaving it, you click on a spreadsheet for some quick calculations. Then click on a bar, pie or line chart, made directly from your spreadsheet. Now paste them both into your MacWrite document. Done. All without leaving MacWrite, and without changing programs or disks. And even on your 128k Mac.



MacWrite Memo and ClickOn Worksheet

New Power for your Desktop

ClickOn Worksheet is a desk accessory that adds a spreadsheet and grapher to any application. The 50 row × 20 column spreadsheet includes features such as variable column widths, absolute/relative addressing, built-in financial calculations (like net present value, compounding, future value) and logical operators. In addition, you can "fold" the spreadsheet to see and graph different parts of it at the same time.



Bar graph created directly from spreadsheet

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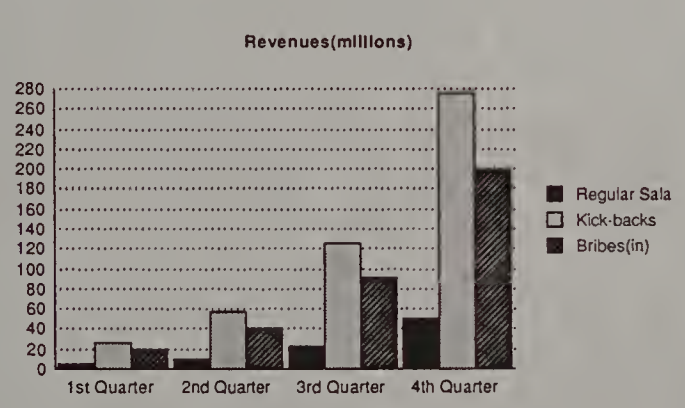
MacWrite Memo

This is an example of using ClickOn Worksheet in conjunction with MacWrite. Notice that both windows are visible and that you can move directly from MacWrite or other application to the Worksheet.

Cash Forecast

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Revenues(millions)				
Regular Salary	$4.79	$10.52	$23.11	$50.77
Kick-backs	$25.94	$56.98	$125.18	$275.03
Bribes(in)	$18.75	$41.20	$90.52	$198.87
Total Revenues	$49.48	$108.70	$238.81	$524.67

We have copied and pasted the spreadsheet into this MacWrite memo. Once copied into MacWrite, it is possible to change the font or font style of the spreadsheet. The spreadsheet shows revenues and expenses by month with quarterly summaries. We used the "folding" ability of the Worksheet to copy and graph only the quarterly results instead of the entire spreadsheet.



Presentation-quality Charts in an Instant

By simply selecting the data you want charted, the Worksheet creates pie charts, bar graphs (stacked or adjacent) or line charts, complete with automatic axes and legends. Any changes in the spreadsheet are immediately reflected in the graph.

Ready-made Solutions

To make your job even easier, we've included a dozen popular applications templates, including income statement/balance sheet with financial ratios, lease/purchase analysis, loan repayment schedule, stock portfolio, and depreciation schedules.

Requirements: 128k or 512k Macintosh™ **Price:** $79.95

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T/Maker Graphics
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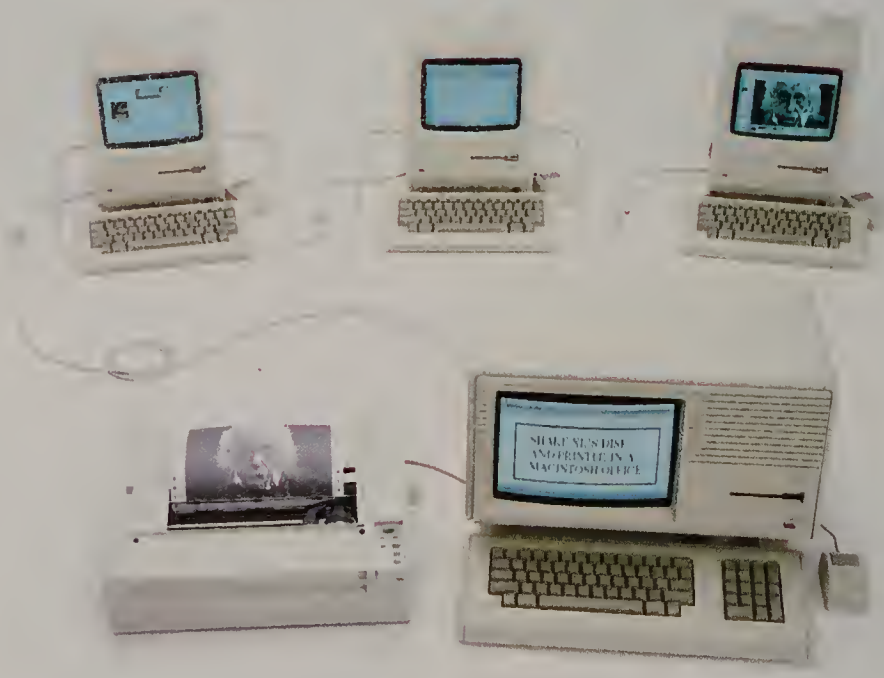
The Macintosh Office works.



Our new **XL/Serve**™ software makes your Macintosh Office work today, by letting you share a Macintosh XL's disk and printer with the rest of your AppleTalk network. Available now, direct from us or from your dealer.

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(continued from page 30)

viduals buying computers for themselves pick Macs over PCs every time.

Steve Slesinger
Melbourne, Florida

Beginner's Pluck

In his letter ["Hold the Mayo," *Letters, Macworld,* June 1985], Joel Varney referred to people like myself as "idiots." Luckily, I have a thick buffer. A magazine such as yours has to reach the neophytes, too. I'd love to get my hands on that so-called ho-hum ten-page article on how to clean my Mac. Maybe Mr. Varney should upgrade his memory capacity. Like everyone else, his disk once needed to be initialized.

Nhan Kolbinger
Roseville, Minnesota

A Patch over Both Eyes

Russell P. Davis asserts that tougher penalties will curtail software piracy ["The Price of Piracy," *Letters, Macworld,* July 1985]. The problem with that approach is that no penalty can do any good unless there is some way to enforce the law. Enforcement is impossible without the cooperation of people who use software. People should report cases of piracy. The reason people do not report piracy is that most of them are involved in it. In my office alone, which has three Macintoshes, about eight people have pirated software, and I am the only one who uses the Mac who isn't a pirate. Let's face facts. In general, people are not as honest as they should be, and it appears that piracy is virtually impossible to stop.

John G. Link
Clearwater, Florida

Making Lemonade

I would like to add a positive postscript to my letter ["Apples and Oranges," *Letters, Macworld,* July 1985] regarding my troublesome MacLemon.

I am happy to report that following several months of "discussions" with Apple, they presented me with a new Macintosh a couple of weeks ago.

Daniel Nign III
Pasadena, California

Another Way to Market

The quality of Apple's marketing seems inversely proportional to the quality of its products. Why doesn't Apple mail quarterly bulletins of new products to Apple owners? Surely direct mail would be a much more effective way to spend money than its advertising campaigns. Does Apple really sell the Mac through half-page advertisements in the Sunday *Times?* I very much doubt it. The best Apple salespeople are those who use Apple's computers.

Brian F. Trent
Chesterfield, England
United Kingdom

Correction

Advanced Engineering Solutions has changed the name of its series of computer-aided packages for electrical engineers (*Macware News, Macworld,* July 1985) from *McCAD* to *CADplus. CADplus* is available from Advanced Engineering Solutions, 3393 Iris Ave. #109, Boulder, CO 80301.

McCAD is the name of a program used for circuit board design. *McCAD* is available from VAMP, 6753 Selma Ave., Los Angeles, CA 90028.

Mail your letters to Letters, Macworld, *555 De Haro St., San Francisco, CA 94107, or send them electronically to CompuServe 70370,702 or The Source BCW440. All published submissions become the property of* Macworld. □

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The C for the Macintosh

"Mimics UNIX ... library handling is very flexible ... documentation is excellent ... SHELL is a pleasure ... blows away the competition for pure compile speed ... an excellent effort."

(Computer Languages 4/85)

AZTEC C68k-c (Commercial System) $499

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Works great with one disk and 128k Mac. Fantastic with two disk drives or hard disk. And insanely great with 512k Mac and the Manx MacRam Disk!

AZTEC C68k-d (Developer's System) $299
Includes all of the Aztec C68k-c system listed above except items marked -c.

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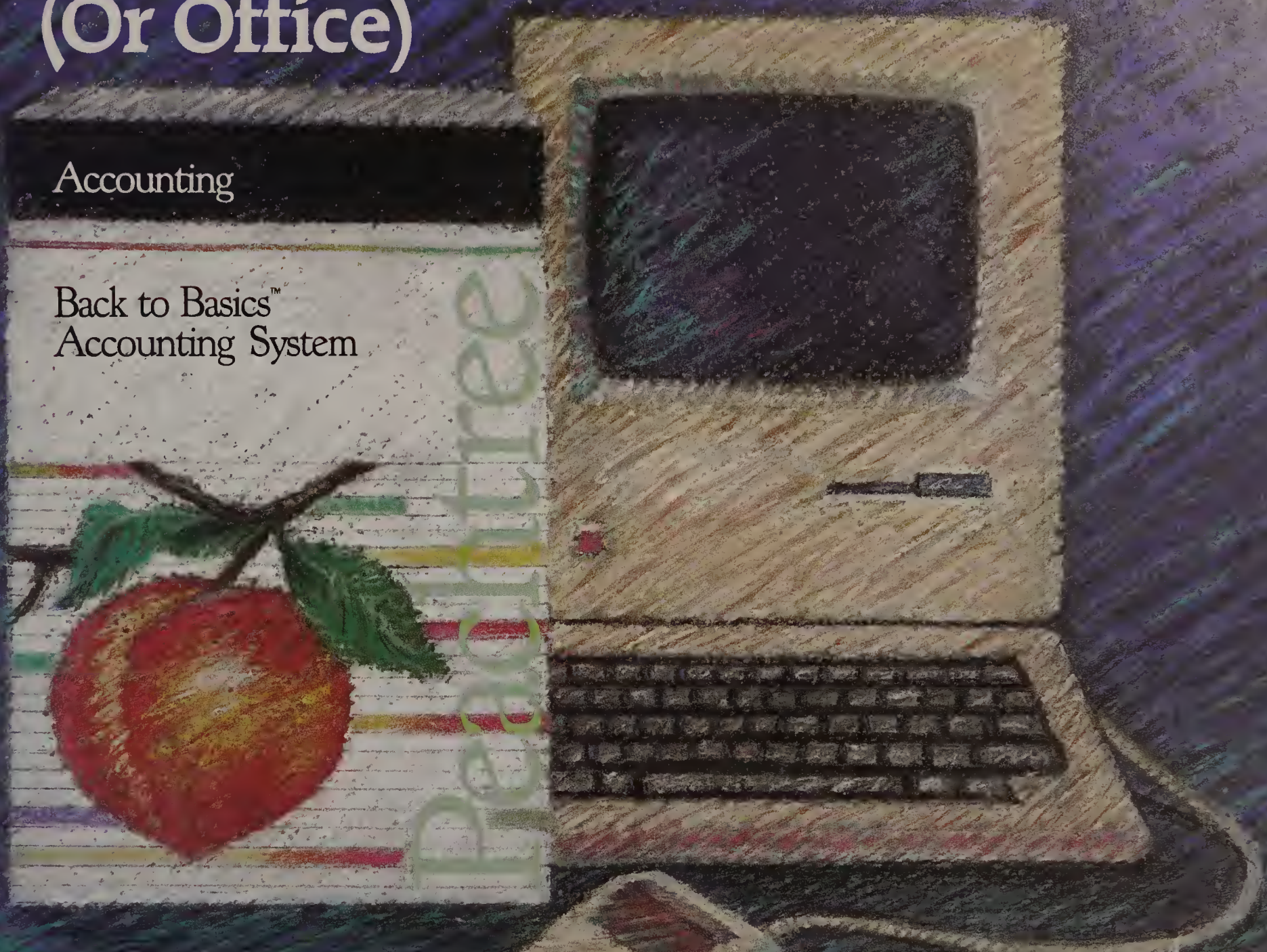
Introducing Accounting For Those With A Mouse In The House. (Or Office)



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It's named Back to Basics because it is an uncomplicated, easy-to-learn accounting system for small businesses.

You don't need any accounting experience and barely need any computing experience. The straightforward manual teaches both accounting and computing at the same time.

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Uncomplicated—easy-to-learn—yet full featured. That's Back to Basics.

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Circle 124 on reader service card

Now data do look base.

The Spokesman

STOCK BOOK

Description Handlebar Tape
Number HT100

Opening Stock: 20	Closing Stock: 10
Last Inventory Date: January 10, 1985	Current Inventory Date: March 31, 1985
Reorder Point: 8	Understocked by: -2

Vendor: MiracleTape Inc.
Vendor Address: 66 Tacky Drive, Stickyville, MA 01701
Comments: Available in brown, red

The Spokesman

Effective January, 1985

PRICE LIST

Item Number	Product Description	Price
AC 2345	Water Bottle	15.00
AB26L	Ladies 26" Breeze 10 Speed	179.00
AB200	Bicycle Built For Two	249.00
AB100		69.00
AB27M		
HT100		
FCA911		
FCA901		
5792		
5796		
5650		
BBS200		
BBA101		
BBA102		
27AW		
26AW		
SB 231		

The Spokesman

12 Bearing Street Wheeling, W.VA 26055

March 6, 1985

Jeremy Williamson, Jr.
1456 East Raybourne Road
Farmville VA 23944

Dear Jeremy:

Thank you for your recent order from the Spokesman Company. We are currently processing your order for immediate shipment. The following list represents the totals we have received in our shipping department.

2	27" alloy wheel	# 27AW	at	$62.00	$124.00
1	Seat Post	# 5792	at	$22.78	$22.78
4	Brake Shoes	# BBS200	at	$3.00	$12.00
2	Saddle Bags	# SB 231	at	$38.00	$76.00
			Total Order:		$234.78

I am confident
products for y
free number i
modify the or
telephone pr
adequate no

Thank you a
again in the

Sincerely,

John L. Sp

To: Acme Water Bottle Sales
2389 E. Salem Drive
Kiokuck, Iowa 23668

To: American Bicycle
234 Main Street
Philadelphia, PA 03456

To: MiracleTape Inc.

The Spokesman

Vendor	Description	Item Number	Closing Stock	Unit
Acme Water Bottle	Water Bottle	AC 2345	8	
Totals for Acme Water Bottle Sales		Unique Items: 1	Units In Stock: 8	Reorder units: 4
American Bicycle	Ladies 26" Breeze	AB26L	3	-1
American Bicycle	Bicycle Built For Two	AB200	4	8
American Bicycle	Solo Unicycle	AB100	5	1
American Bicycle	Mens 27" Blazer	AB27M	3	1
Totals for American Bicycle		Unique Items: 4	Units In Stock: 15	Reorder units: 9
MiracleTape Inc.	Handlebar Tape	HT100	10	-2
Totals for MiracleTape Inc.		Unique Items: 1	Units In Stock: 10	Reorder units: -2
Miyaka Bicycle	Chrome forks for 27"	FCA911	2	1
Miyaka Bicycle	Red Flyer Bike	FCA901	4	1
Totals for Miyaka Bicycle		Unique Items: 2	Units In Stock: 6	Reorder units: 2
			2	1
			5	3
			3	3
		Units In Stock: 10		Reorder units: 7
		Units In Stock: 49		Reorder units: 20

$5.95
$78.85
$15.95
$1.75
$14.65
$65.
Total Restock Cost: $1,330.81

The Spokesman

PURCHASE ORDER

To: Weinmann, USA
88 Skid Row
New York, NY, 01103

Description	Item Number	Units	Unit Price	Extended Price
Brake shoes	BBS200	2	$0.50	$1.00
Brake lever, right front tire	BBA101	1	$5.45	$5.45
Brake lever, left front	BBA102	2	$5.45	$10.90

Amount of Purchase order:	$17.35
Sales Tax:	$1.12
Total Amount of Purchase order:	$18.47

esn't have to

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And in addition to doing all the meat-and-potatoes things a database is supposed to do—calculations, summary reports, sorting of all kinds—FileMaker does everything you bought your Macintosh™ for. Text editing. Graphics. Pull-down menus. Keyboard commands. Windows. Different fonts, styles and graphic design tools. Your information not only makes more sense, it makes an impression. Any kind you want.

With FileMaker, you can even design your own data entry forms, so you can put information *in* any way you want, without arbitrary limitations. And of course, it does all the tricky little things automatically... like indexing every word, number and date for speedy searches.

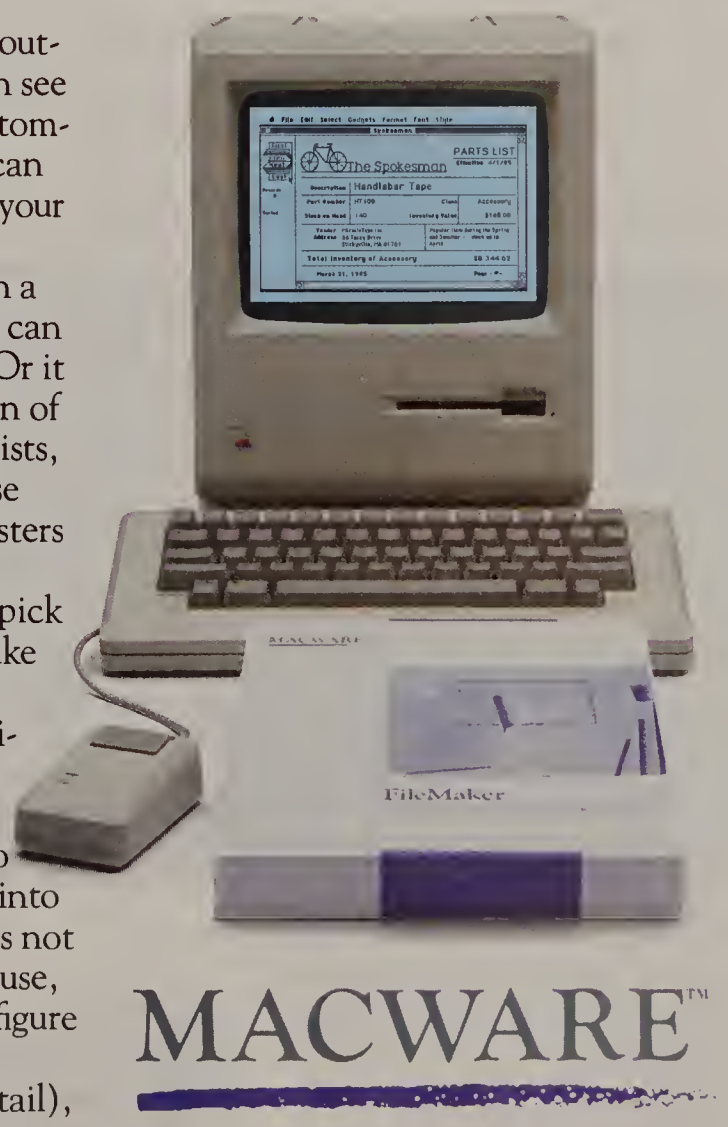
Because you design your output right on the screen, you can see exactly what you (and your customers) are going to get. And you can create any number of forms for your information to take.

So what might have been a dreary order acknowledgement can now be a clear, friendly letter. Or it can be a meaningful comparison of inventory by vendor. Or parts lists, receiving verifications, purchase orders, labels, name badges, rosters and hit lists.

With FileMaker, you can pick up data from other programs, like MacWrite,™ MacPaint,™ Multiplan,™ Jazz,™ and share the applications you've created with other members of your team. You get all the tools you need to easily consolidate group efforts into one database. And FileMaker is not copy protected, so it's easier to use, easier to back up, easier to configure for the Macintosh Office.

So for $195 (suggested retail), things could look considerably better for your entire division, department, professional practice, retail operation, club, organization, or principality.

To get a $15 demo version of FileMaker, call 1 800 MACWARE today. From Forethought, Inc.



MACWARE™

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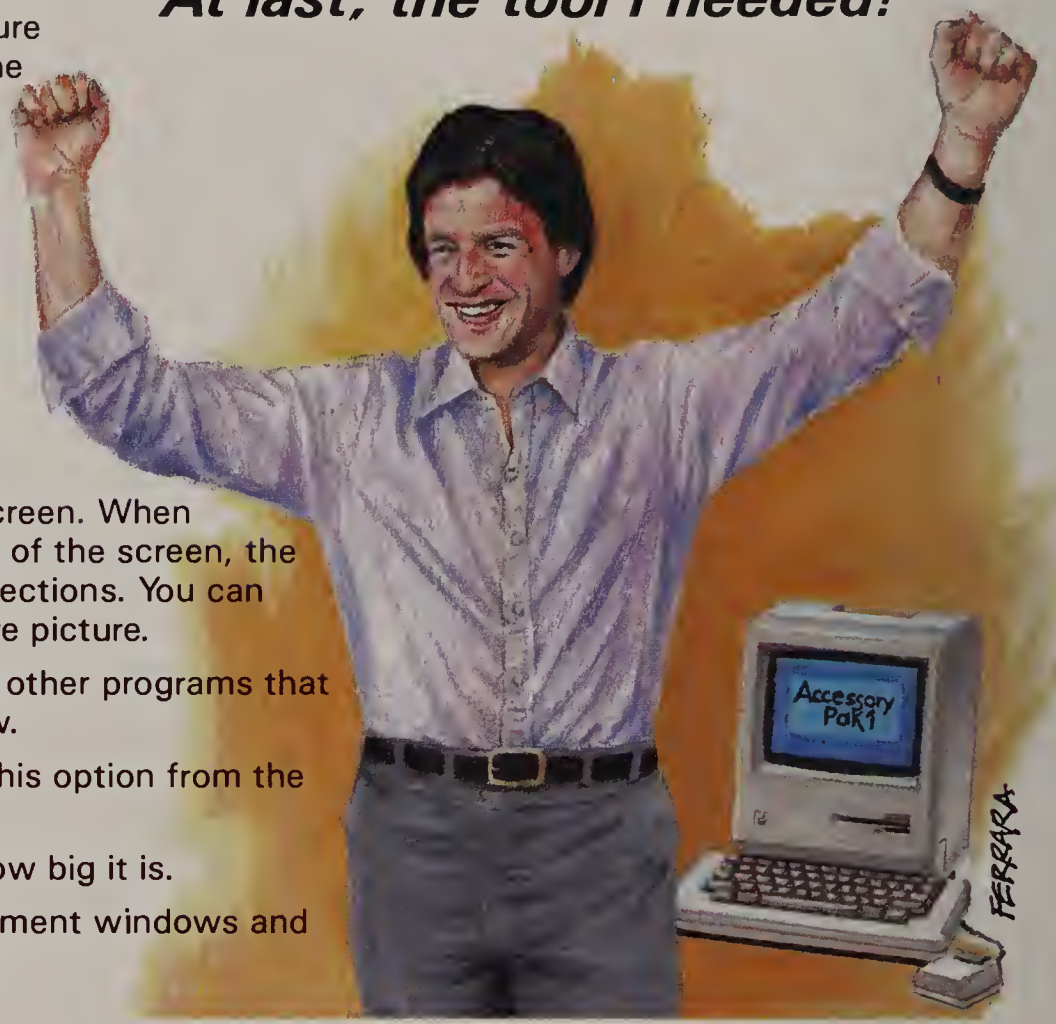
Now you can cut and paste up to an entire MacPaint document!

"At last, the tool I needed!"



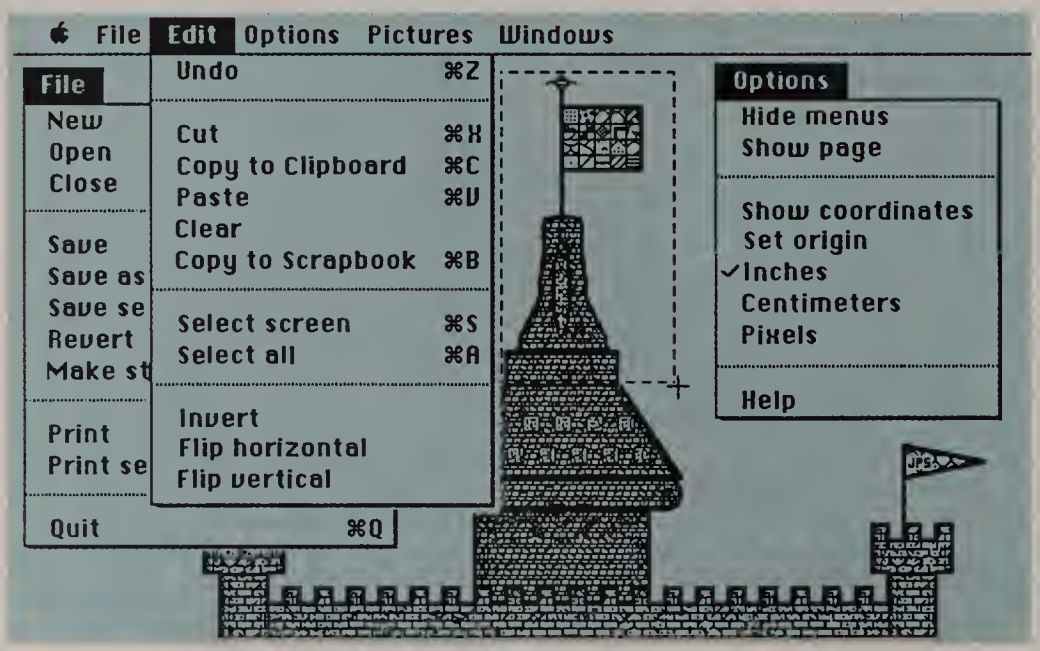
Do you need to paste a half page MacPaint™ picture into MacWrite™ or MacDraw™? Or maybe combine two large portions of two separate pictures? Now you can overcome the limitations of the MacPaint window size with Paint Cutter™, one of several useful tools on

Accessory Pak 1™

Here are some of the features of

- **Paint Cutter™**
  - — The MacPaint file is displayed using the full screen. When the selection rectangle is dragged to the edge of the screen, the picture scrolls, allowing larger-than-screen selections. You can Cut or Copy any size selection, up to the entire picture.
  - — Paste these larger-than-screen selections into other programs that use the clipboard, like MacWrite and MacDraw.
  - — Create custom Startup Screens by selecting this option from the File menu.
  - — Move, invert or flip the selection, no matter how big it is.
  - — On a 512K Mac, open multiple MacPaint document windows and cut and paste between them instantaneously.

Use PAINT CUTTER™ with SWITCHER™ for lightning fast results!



Also included on the Accessory Pak 1 disk are:

- **MacPaint Rulers Desk Accessory**
  Install our rulers on the outside of the MacPaint window to measure in inches, centimeters or pixels. The rulers have moving trackers like MacDraw.
- **Screen Saver Program**
  Save your screen from image burn-in. When there is inactivity, the screen is blanked until the mouse is clicked.
- **QuickEject Desk Accessory**
  Quickly eject all floppy disks that are on-line and restart the system.
- **Coordinates Desk Accessory**
- **Silicon Beach Font**

System requirements: 128K, 512K or XL. Screen Saver is not relevant to the XL.

To get your copy of **Accessory Pak 1** see your local dealer or send $39.95 (Calif residents add $2.40 tax) plus $2.00 shipping to:
Silicon Beach Software
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San Diego, CA 92126
-or-
Call us at (619) 695-6956
Visa or Mastercard accepted

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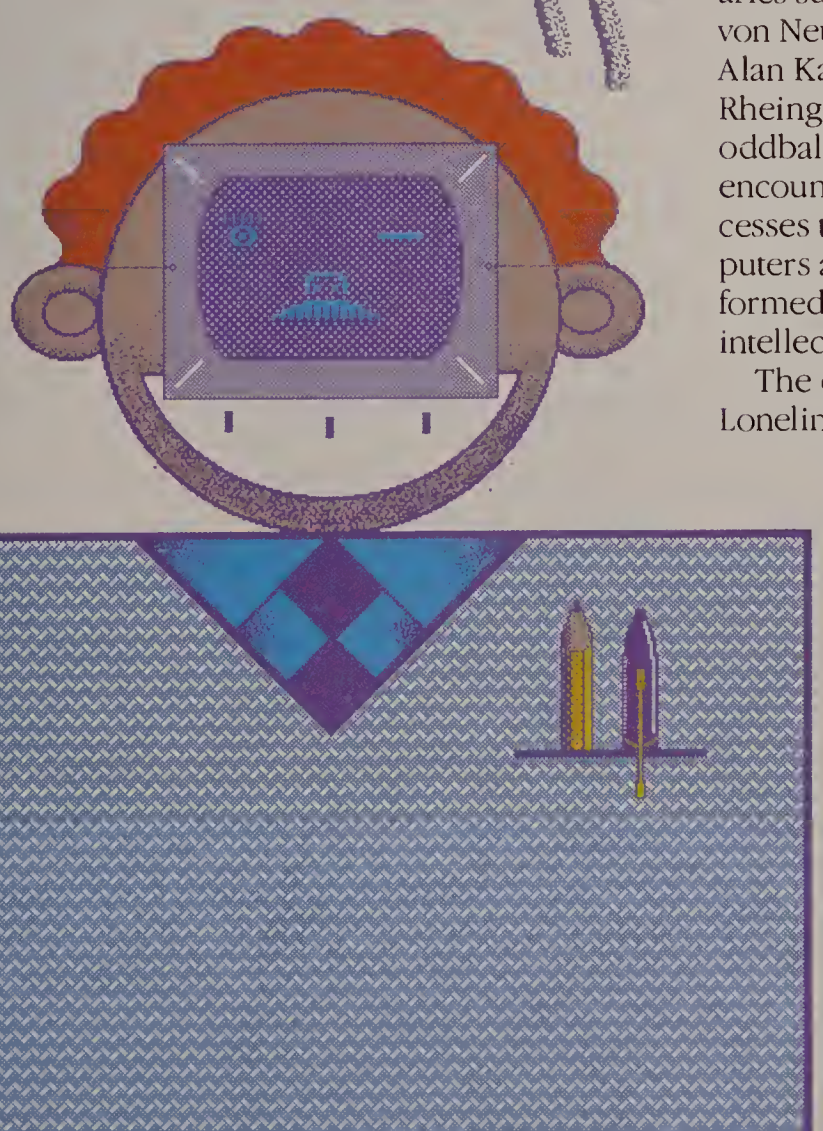
Circle 266 on reader service card

Macworld View

The Macintosh in China, public-domain fonts, the New York Mac user group, a LaserWriter co-op, and more

Edited by Herschel Schmedick

I suspect that many of you reading this column have had strange or enlightening encounters with the Macintosh. Or perhaps you've heard of someone else's unique application of the Mac. Your contributions are welcome. Macworld *pays up to $50 for each item published. Send your contributions to* Macworld View, *555 De Haro St., San Francisco, CA 94107. All published submissions become the property of* Macworld. *I look forward to hearing from you.*



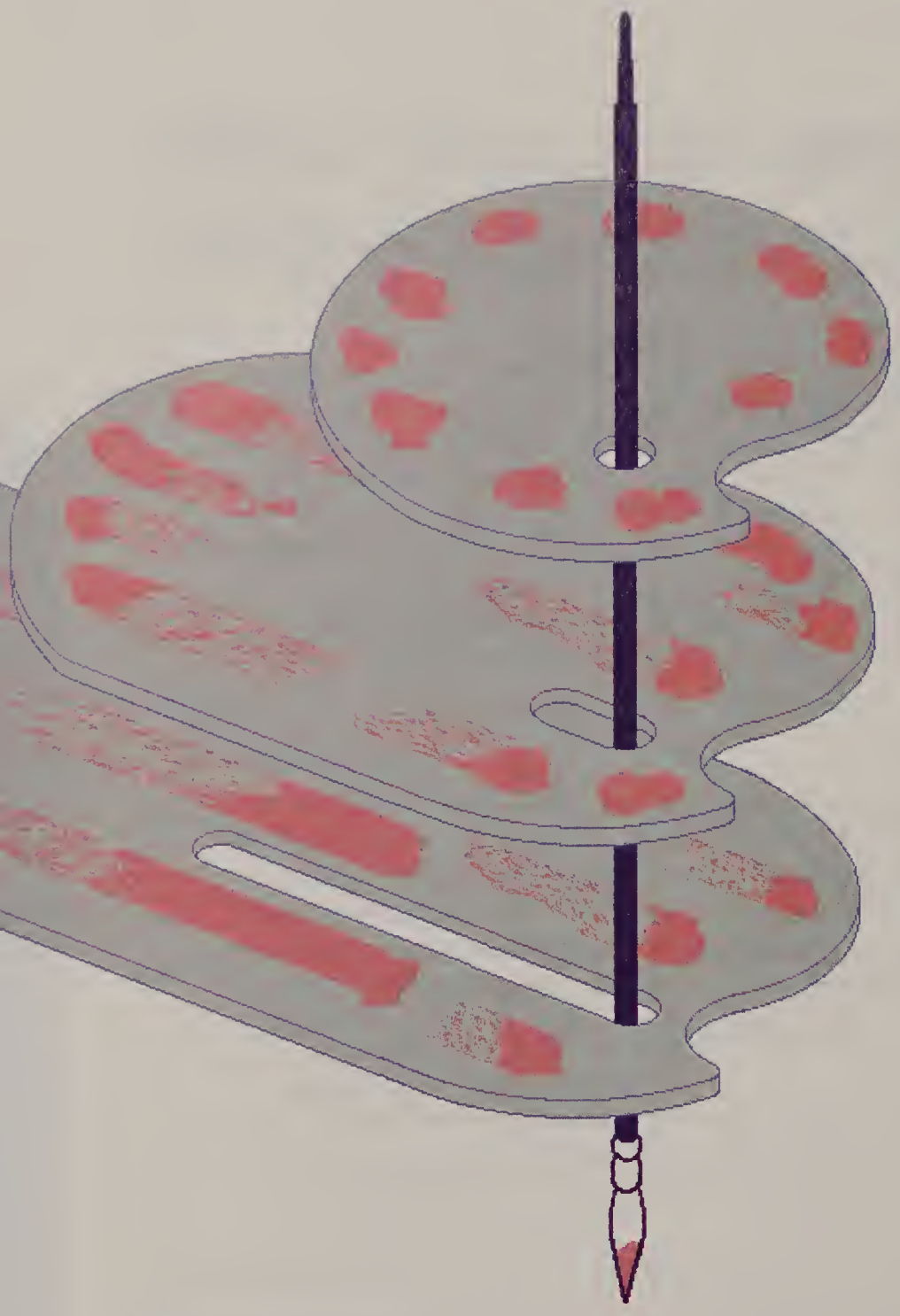
Tools for Thought

Most of us have only a vague idea of how the computers on our desk tops evolved from mysterious devices designed for complex mathematical calculations into new-age "tools for thought." Howard Rheingold's latest book, *Tools for Thought: The People and Ideas behind the Next Computer Revolution* (Simon & Schuster, 1985), focuses on a few of the people who were instrumental in the development of computers, including visionaries such as Alan Turing, John von Neumann, Doug Engelbart, Alan Kay, and Ted Nelson. Rheingold's accounts of the oddball geniuses, accidental encounters, and creative processes that led to today's computers add up to a lively, informed scientific and intellectual history.

The chapter entitled "The Loneliness of the Long-Distance Thinker" chronicles mouse inventor Doug Engelbart's efforts in the last 35 years to hasten what he believes is the biggest jump in cultural evolution since the printing press–the computer revolution. This excerpt describes Engelbart demonstrating his experimental computer system in 1968:

"Engelbart was the very image of a test pilot for a new kind of vehicle that doesn't fly over geographical territory but through what was heretofore an abstraction that computer scientists call 'information space.' He not only looked the part but acted it: Chuck Yeager of the computer cosmos, calmly putting the new system through its paces and reporting back to his astonished earthbound audience in a calm, quiet voice."

In the closing chapter, "Xanadu, Network Culture, and Beyond," Rheingold summarizes how new cultures and ideas are developing from computerized information networks and speculates about the future of computing. The computer revolution, the author concludes, hasn't happened yet. If his prediction is correct, I look forward to reading his impressions of the "real" computer revolution.–*Jeff Berner*



The Stretch Machine

Cartoonists and portrait painters may seem to be at opposite ends of the artistic spectrum, but both are enthusiastically discovering the Macintosh. Jeff Danziger creates the syndicated comic strip "McGonigle of the Chronicle," which concerns the trials and tribulations of a newspaper staff. Danziger's characters are often posed reading newspapers, catalogs, or detective novels. To show his readers what the characters are looking at, Danziger uses the Mac to generate the type for the reading matter. Danziger draws the panels of the strip on transparency paper. After typing the text in *MacPaint,* he holds the transparency up to the screen and uses the marquee to stretch or compress the type so that it fits within a specified area of the panel. He then prints out the type and pastes it on the panel.

William Newman is another artist who has found ways to use the Macintosh creatively. Newman's immense colored-pencil drawings have been exhibited nationwide for 15 years. Recently he began to draw unusual portraits. Close up, the images appear to be black-and-white abstractions that look something like landscapes, but from an angle the portraits become recognizable as people. The trick is *MacPaint.* Newman first draws portraits in *MacPaint* and then stretches the images until they are no longer recognizable from a head-on perspective.

Newman's next steps are to digitize photographs and video images and to manipulate the images on the Mac. A revolution in the art world? Not exactly. Newman doesn't intend to move away from the subject matter that has dominated his work for years—the relationships between men and women.—*Ted Nace*

LaserWriter Co-op

Cooperatives have been around since people realized that two can defend themselves against the elements better than one. Cooperatives enable people to share resources, such as farm machinery or distribution networks. Some San Francisco Bay Area artists and entrepreneurs, who individually can't afford a $7000 printer, formed a cooperative to purchase and maintain a LaserWriter. The co-op is made up of TargetVideo/Alpha Editing, a video production and editing company; *Another Room* magazine, an arts and music magazine; *I.V.* magazine, a video publication; Highline 3 Fine Arts, an art gallery; and a loosely affiliated collective consisting of the MoDM Gallery; Office of the Future, an audiovisual arts project; and Pink Noise, a computer-oriented graphics and audio project. All the members use the laser printer for both their creative work and mundane business.

Members buy co-op shares that can be sold later if they decide to get out. To defray costs, the group plans to rent time on the machine to people outside the co-op. The LaserWriter stands in a central location, and one of the co-op members acts as a system manager, coordinating usage and collecting fees.

Michael Mallery, the publisher of *Another Room,* notes, "The LaserWriter has the potential to do the same thing the Macintosh has already done: it's making a technology available to people who didn't have the means or the knowledge to use it before. In a few years maybe the cost will come down enough for everyone who wants a laser printer to have one. We just can't wait that long."—*Tracy Tuprian*

Lights, Focus, Action

When Apple's ad agency, Chiat-Day, was ready to film the first commercials showing the Macintosh screen, they knew they couldn't just point the camera at the screen and start rolling. Because the Macintosh draws the video image 60 times a second, the film shutter needs to open and close in sync with the video screen. Otherwise the camera photographs different portions of the screen image on each frame, resulting in a flickering effect when the film is projected.

Chiat-Day learned that John Monsour, a cameraman with 15 years of experience and a flair for electronics, had successfully filmed the screens of the Xerox Altos and Star computers, which have a user interface similar to the Mac's. To solve the synchronization problem, Monsour removed the cover of the Mac to reach the connector that runs between the digital and analog boards. Monsour connected a "black box" to the camera and the computer to analyze the sync signals from the computer and tell the camera when to open the shutter.

John Monsour and 200 Macs

When it came to filming 200 Macs for the commercial, the problem became more complex. The 75 Macs in the front rows were dismantled and set up to run in sync, and programmers worked night and day to get hundreds of Macintosh programs cycling in unison on the machines. Separate equipment was designed to send a synchronized signal to the Macs.

Despite the preparations, the system fell apart the day of filming. The crew had begun work early the morning of the final shoot. By 10 a.m. one Macintosh had stopped working. Monsour took the Mac apart to figure out what had happened. By 10:30, a Mac was quitting every 3 minutes. Monsour figured that within 2 hours they'd all be out. But after eight had gone out, Monsour discovered that the digital board had overheated and warped. As the board bent, it touched the metal casing and shorted out. He placed tape on the bottom of the board to prevent the wires from touching the metal casing. The Macs kept running, and the filming was successfully completed. The rubber pad Apple now applies to the bottom of the Macintosh digital board is, in part, the result of Monsour's unusual field test.

Macworld's Top 10 Best-Selling Business Software

Months on chart	Last month	This month	Product
3	1	1	*Microsoft Word,* Microsoft
2	3	2	*Microsoft File,* Microsoft
3	2	3	*Microsoft Multiplan,* Microsoft
3	6	4	*Microsoft Chart,* Microsoft
0	–	5	*MacDraw,* Apple Computer
3	4	6	*Dollars and Sense,* Monogram
3	5	7	*pfs:file,* Software Publishing
3	7	8	*MacTerminal,* Apple Computer
3	9	9	*MacProject,* Apple Computer
1	–	10	*Helix,* Odesta

Source: InfoCorp

Lisa On-Line Conference

Lisa and Macintosh XL owners have taken to the networks to air their grievances and share information regarding Apple's discontinuation of the Lisa and Macintosh XL product lines. Sponsored by The Networkers, a San Francisco consulting service, the LisaTalk TeleConference brings together independent product developers, Apple representatives, members of the press, and Lisa and Macintosh XL owners throughout the world. Many of the approximately 50,000 owners of the machines, some of whom have invested $10,000 to $20,000 in their systems, are concerned about receiving quality customer support and service from Apple and other developers. Owners are also concerned about Apple providing the promised migration package that will allow Lisa users to transfer data from the Lisa Office System into the MacWorks environment.

During a teleconference last summer, Apple representative Stephanie Littel said that authorized Apple dealers will supply parts and support for five years (until 1990) for Lisa and Macintosh XL owners.

Many of the Lisa owners on line, however, were less than enthusiastic about that arrangement. According to Louis Guice of The Networkers, "Only a few dealers are genuinely familiar with the Lisa or prepared to provide customer support. Basically," Guice adds, "there is no financial incentive to provide customer support for Lisa and Macintosh XL owners."

Guice believes the solution is for Apple to contract with an outside agency for the service and support, rather than relying on reluctant dealers. Currently, The Networkers (3500 Market St. #103, San Francisco, CA 94131, 415/550-0929) provides both telephone and on-site support to Lisa and Macintosh XL owners for a modest fee. Intersol (800/HELP-OUT), another independent consulting company, provides its subscribers with telephone support.

Frank Liu, an Apple dealer in Taipei, Taiwan, and a group of elementary school students sing along with the Macintosh and MusicWorks. *According to Liu, the Mac is popular in Taiwan, but sales are low because the machine is significantly more expensive than in the United States.*

Manhattan Mac Users

It used to be that user groups were havens for computer hackers. Meetings were largely an opportunity to trade snippets of code and programming secrets. With the Macintosh, however, it appears that user groups are finally attracting the regular folks who use the computer. A good example of the change is the New York Mac Users' Group (NYMUG). At first glance, NYMUG looks like a traditional user group, with monthly meetings, a Mac-generated newsletter, and special-interest groups. But NYMUG's members are mostly young Manhattan professionals who come to the meetings dressed for success. "We're a Yuppie group, for sure," says Copresident Steve Doochin.

NYMUG has been moving toward becoming a service organization. For example, NYMUG made an arrangement with Western Union to offer members the EasyLink communications service in a special subscription that waives the sign-up charge and the monthly minimum fee and includes $25 of usage credit. The New York group keeps a collection of equipment, including three image digitizers, that members can borrow and experiment with while making purchase decisions. Many computer stores in New York offer NYMUG members discounts on purchases. NYMUG has an electronic bulletin board, operated by David Rose, that carries the latest group news, a library of public-domain software that is also available on disk by mail, and a message service for members.

NYMUG plans a half-hour television show, to run on public-access cable television or to be distributed on videocassette. In addition, NYMUG is negotiating with a technical support service to provide members with a toll-free telephone help line.

If you live in the New York metropolitan area, you can get membership information by writing to NYMUG at P.O. Box 6686, Yorkville Station, New York, NY 10128.—*Robert C. Eckhardt*

Fonts in the Public Domain

Collecting fonts is like collecting stamps: the hobby can turn into an addiction, and a potentially expensive one. Whether you're hooked or not, public-domain fonts are an inexpensive way to add fonts to your collection.

For the cautious collector, the public domain offers new point sizes and revisions of many existing Apple fonts. Fonts in new point sizes, such as 36-point Cairo, designed by Mike Smith, provide better print quality on the Imagewriter. Other fonts in new point sizes include R. W. Zehr's Monaco-10, Chicago-9, New York-14, and New York-24 and Fritz Anderson's London-36, Venice-24, and Venice-28. Revisions to existing fonts run the gamut from cleaning up minor design flaws to recasting an entire font.

An acquisitive collector might want to try entirely new fonts. A few of these, such as Ron Nicholson's Pica-10 and Jason Kanter's Vancouver, which comes in seven sizes, are text fonts. Most public-domain fonts, however, work best as display fonts—for example, James Doherty's classy but nearly unreadable Dali-24 and Dennis Fraser's Black Shadow-48.

For collectors of esoterica, special-purpose fonts are also available. Multilingual Macintosh owners may be able to use foreign language fonts such as Don Johnson's Arabic-24 or Scott Wilde's Russian font, Cyrillic-12. For scholars, the Greek alphabet and many mathematical symbols are available on D. E. Dougherty's and S. H. Lam's impressive Princeton-12 and -24. Electricians might want to try Paul Dobbs's Schematic-24, and people who want to jazz up text with icons might like Icon-12. Readers familiar with J. R. R. Tolkien's fantasy world will enjoy Martin Bryant's well-executed Rivendell-14 and Isengard-18.

Almost all public-domain fonts are available from Data Library 7 of CompuServe's MAUG. To find them, use the font's name or the word *font* when asked for a keyword. But font addicts who download the entire collection are likely to run up quite a bill for connect time. A more cost-effective collecting method is to purchase font disks from user groups. The disks usually cost less than $10 and contain many of the most attractive fonts, including some that are not available over the phone lines.—*Robert C. Eckhardt* □

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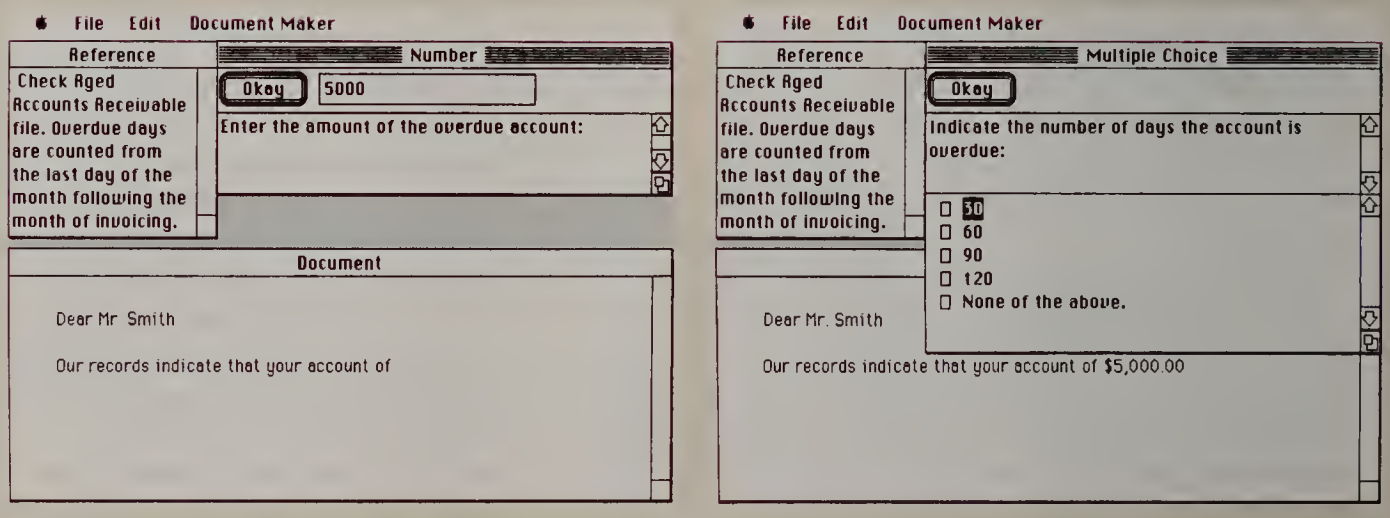
Addressing lawyers, marketing and sales executives, real estate agents, and anybody else who repeatedly, repetitively prepares letters or documents that are in the same vein – yet never identical



All kinds of documents, big or small are a breeze. All you need is a 512K Macintosh and a repetitive job. Collection letters, for example. (No doubt you'll have different needs, but the principle's the same). After creating the model, the credit manager turns over the job to a worker bee. As the simple prompts, created by you (the credit manager), are answered ***(Screens # 1 and # 2)*** *the letter is composed a block at a time. The reference section warns of potential pitfalls and gives expert advice along the way. The built-in*

Oh, the drudgery of continually preparing documents that repeat themselves – yet are never so alike that you can either duplicate them or reduce them to form letter proportions. All those words, all those figures, all those hours spent scribbling, patching, rearranging. It's all over. Glory be!

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Its ancestry. The Document Modeler might well be termed revolutionary; there's certainly nothing like it. However, "revolutionary" implies throwing over the traces completely and the Document Modeler does owe its origins to earlier marvels of the computer age.

Such as word processing – although it goes way beyond word processing (see example).

The Document Modeler is also more than a spreadsheet. It can calculate, recalculate and format numbers with the best of them. But it goes further – fluently molding and manipulating words, sentences and paragraphs as well. Producing impeccable documents with words and figures mixed – exactly how you want them mixed. Nothing else will do as much.

The Document Modeler is also much like an expert system. Except that it's "just plain folks" – a professor going for a beer with the boys. More street smart and flexible than an expert system, it allows for the umpteen variables of the business world and doesn't demand fluency in a cryptic computer language.

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For ever after, that particular family of documents can be delegated to somebody less senior, less experienced, less qualified – and less expensive.

Basically, all they have to do is answer a series of prompts such as YES or NO, or make some multiple-choice selections, or just type in the particulars requested – all the while using guidelines and suggestions that appear on the screen just when they're most useful. All of them set out by you.

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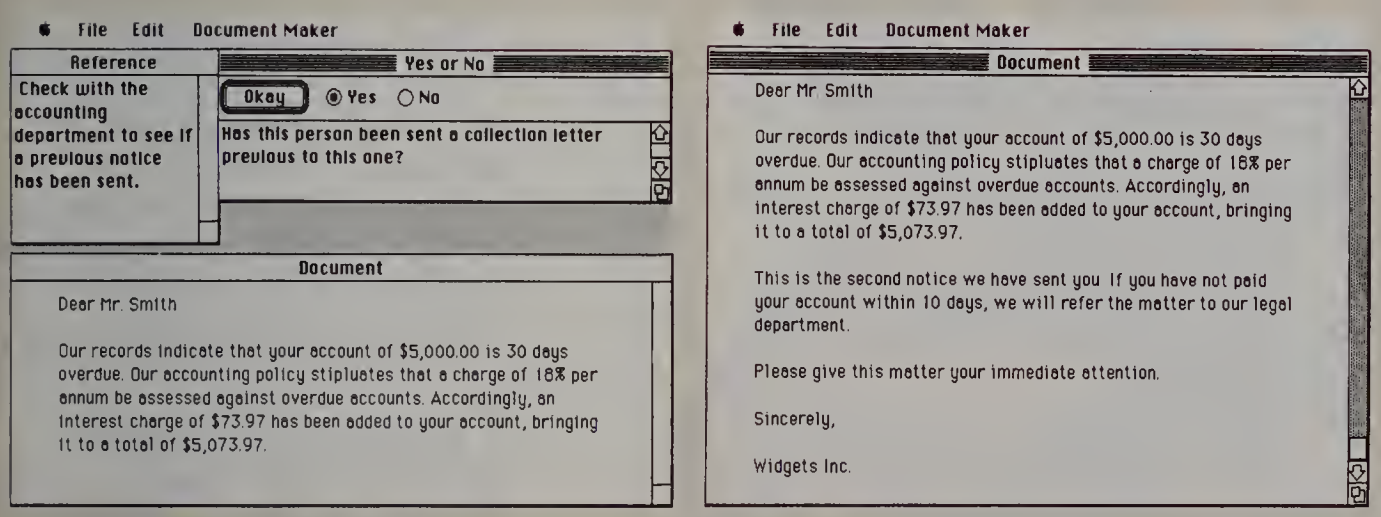
FOR ALL.



math power eliminates errors. ***Screen # 3:*** *Is the letter a friendly reminder, or are you starting to talk tough?* ***Screen # 4:*** *Voila! The finished, customized letter as a MacWrite document. Elapsed time? About half an hour to write the script. How long for the letter? Don't blink. You'd miss it. How long to generate a complex mortgage agreement, including the math? A few minutes.*

last comma and the last decimal point.

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Call to arms. The Document Modeler consists of two programs (one to make the model, the other to make documents) which together cost $299 U.S. – and which will almost certainly save you this much or more in the first application. (Note: The price is as modest as it is primarily because we're only selling "direct from the maker" as they say, and because we're Canadian; the U.S. dollar is worth about 35 per cent more up here.)

To obtain the Document Modeler, or for more information, contact us, The Model Office Company, developers of advanced modeling tools for business – and only for business.

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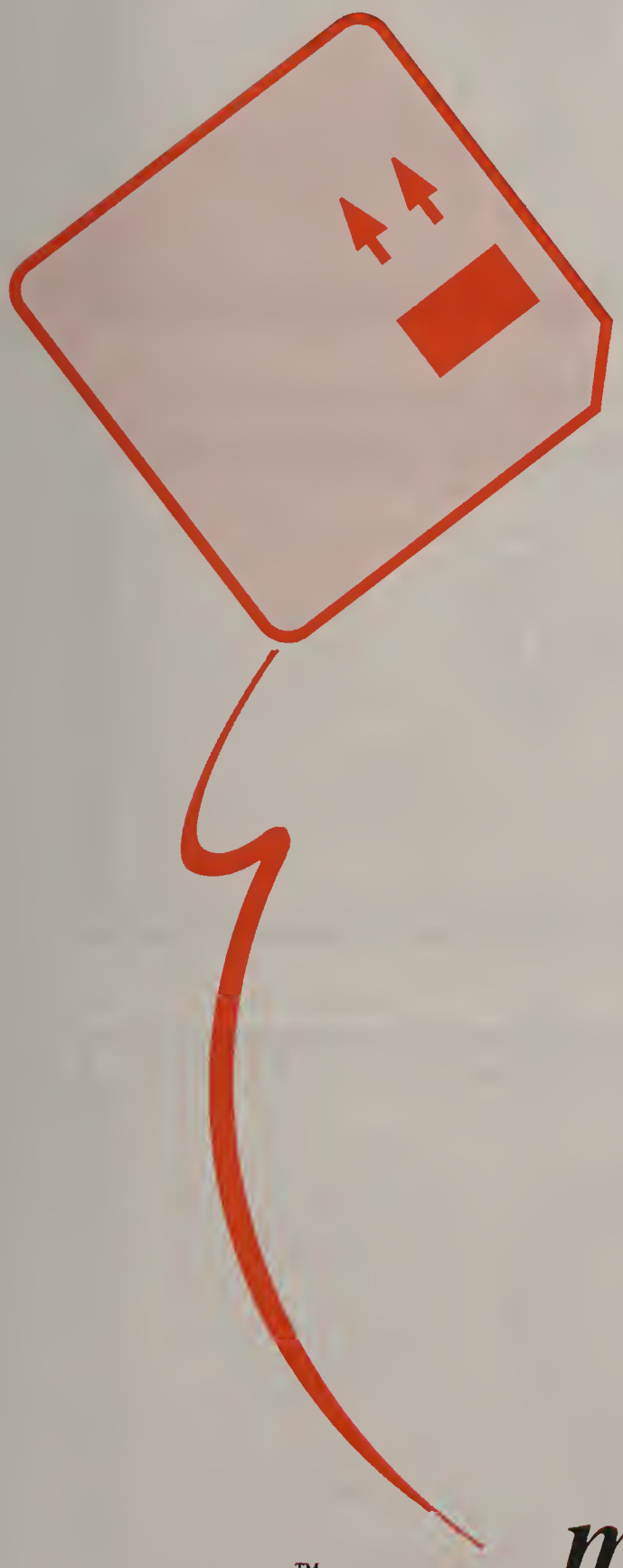

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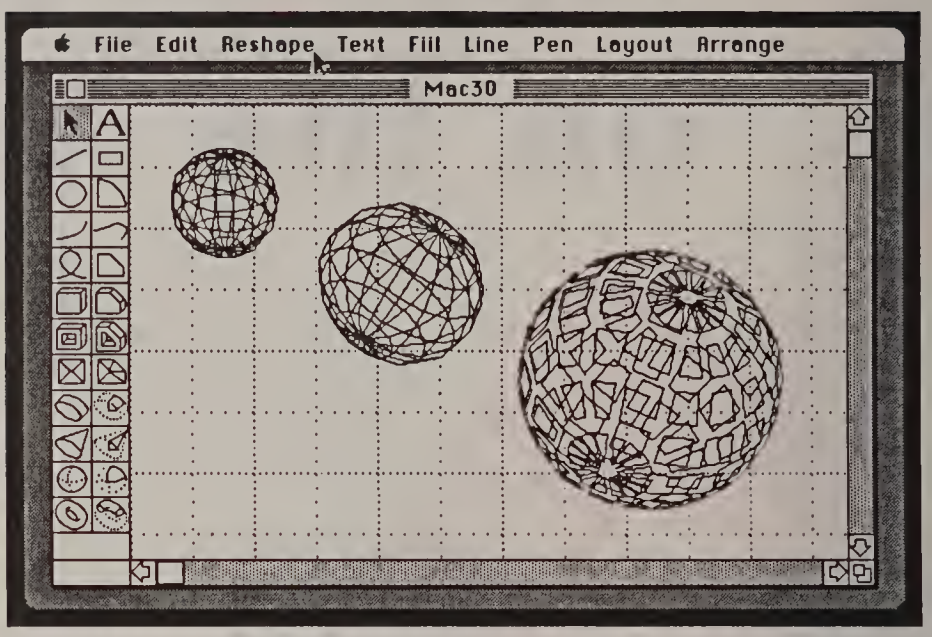

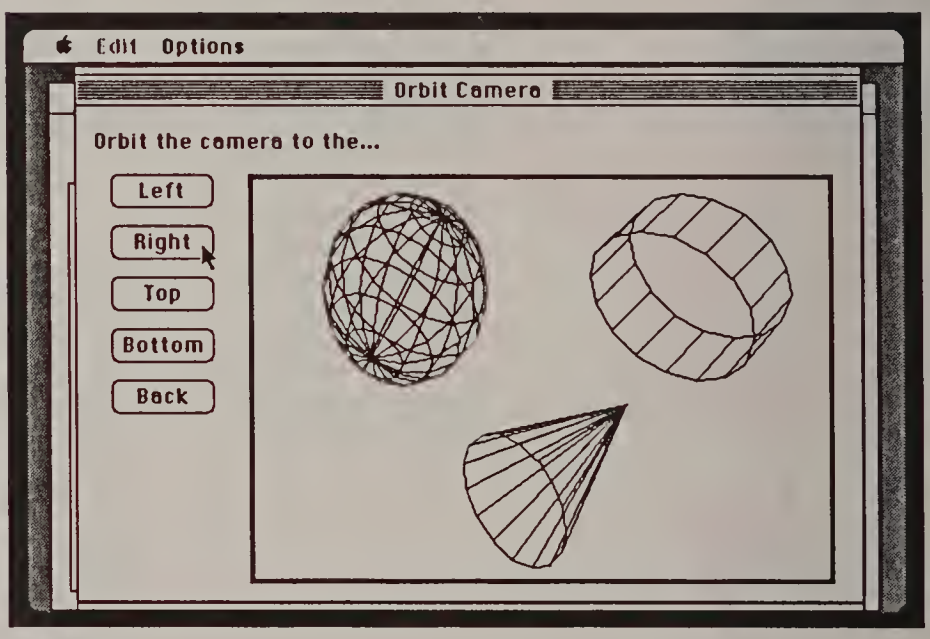

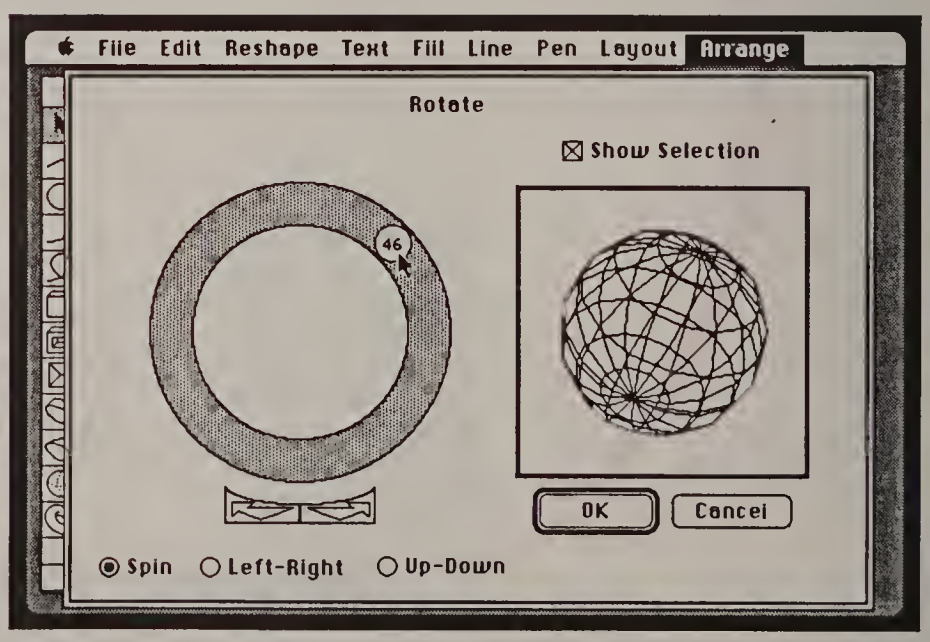

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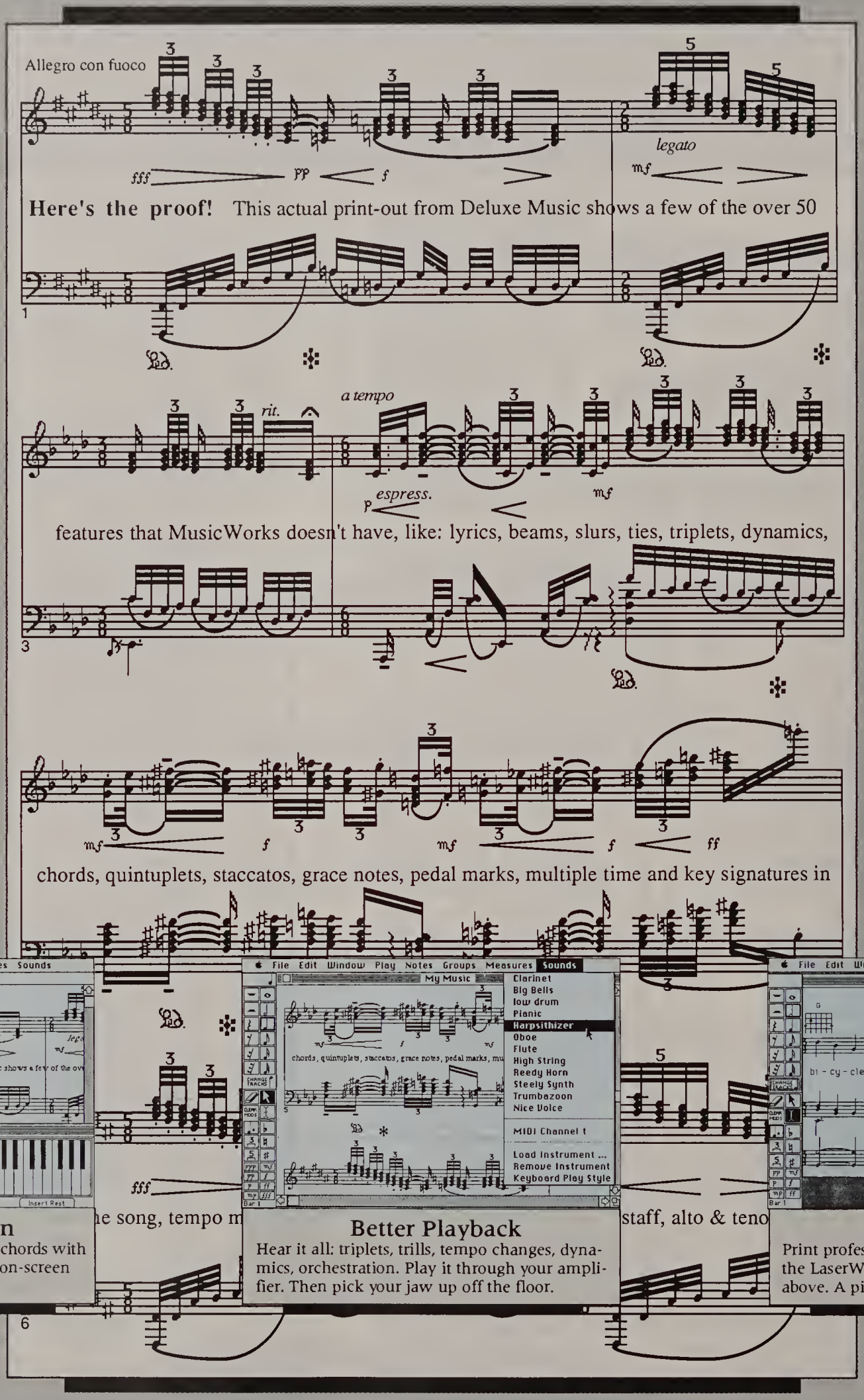

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Get Info

Macworld's tutor answers questions about converting files, enlarging charts, and reducing waiting time for the printer

Lon Poole

Converting documents is a recurring theme in this month's column. How many times have you wanted to convert a document from *ThinkTank* to *Microsoft Word,* from *MacWrite* to Macintosh Pascal, or from *WordStar* to *MacWrite?*

We also hear from a reader who doesn't like waiting for his Mac to finish printing a document. Another reader, who uses *Microsoft Chart,* wants to enlarge his graphs when he prints them. And an individualist is looking for a program that will help him personalize icons.

From ThinkTank to Word

Q. How do I go about transferring a large outline from *ThinkTank* to *Microsoft Word?*
Tim Cunningham
New York, New York

A. You can cut and paste or copy and paste to transfer all or part of an outline from *ThinkTank* to *Word* via the Clipboard. However, subordinate headlines will not be indented.

In either the 128K or the 512K version of *ThinkTank,* select the heading you want cut or copied; all subordinate headings and text windows are automatically included in the selection. To select a whole outline, select the topmost head. Choose Cut or Copy from the Edit menu to put the selection on the Clipboard. Then quit *ThinkTank,* eject the *ThinkTank* disk, insert the *Word* disk, and start *Word.* Do not switch off the Macintosh or press the reset switch while swapping disks. Open any *Word* document, or use a new, untitled one. Select an insertion point and choose Paste from the Edit menu. The outline appears in the *Word* document window, fully expanded and with a plus (+) or a minus (−) as the leading character at the beginning of each line. Use *Word*'s Change feature to remove the leading characters or replace them with tab characters.

MacWrite to Macintosh Pascal

Q. How can I translate documents written with *MacWrite* into Pascal programs? I prefer the editing features of *MacWrite* over those of Macintosh Pascal. If the conversion is possible, I would like to use *MacWrite* to write Pascal programs.
Sarah Brooks
Utica, New York

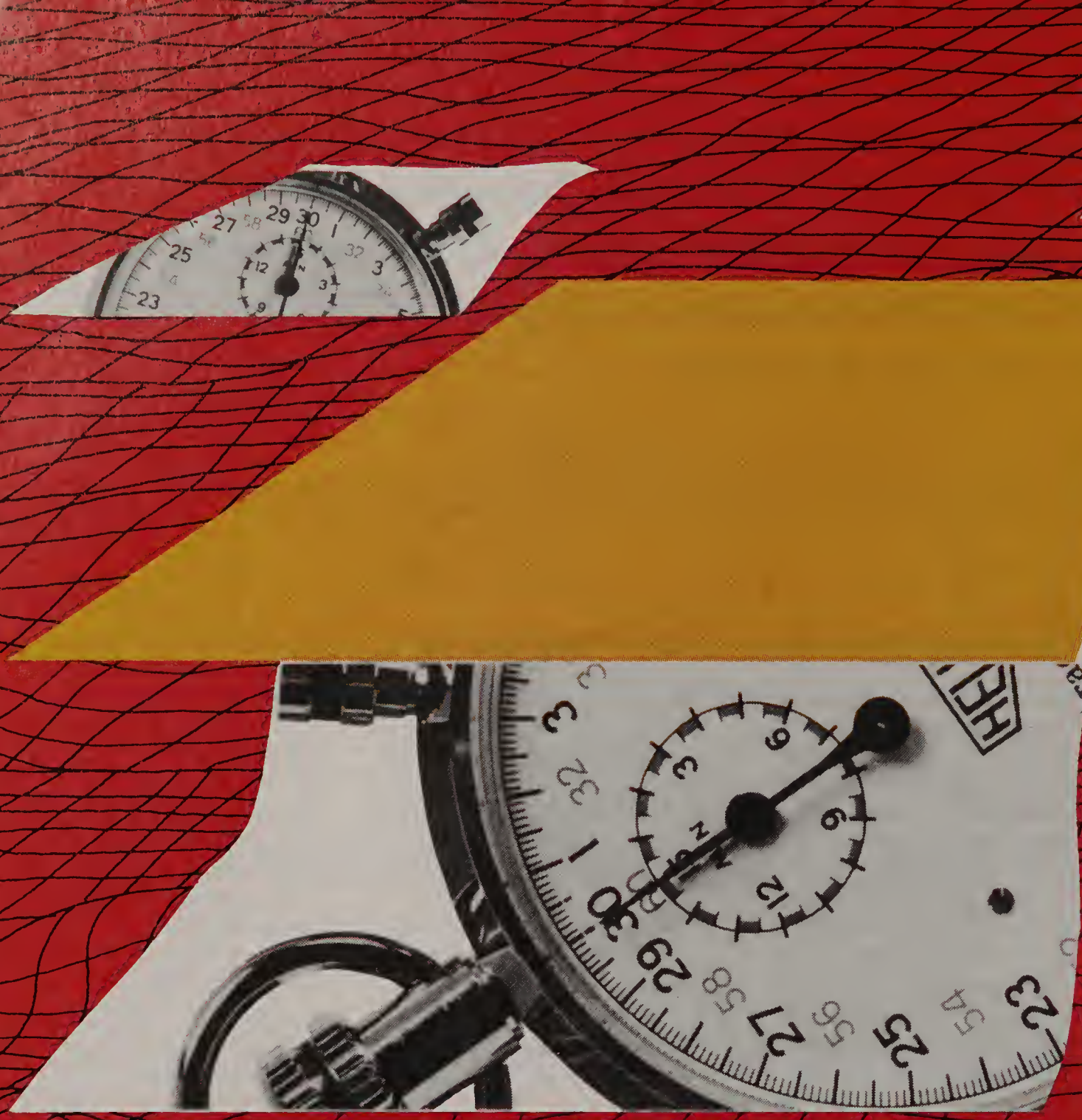
A. Macintosh Pascal can open any unformatted text document as a program. You can easily convert a regular *MacWrite* document to a plain text document. Open the *MacWrite* document and choose Save As from the File menu. Type any document name, but be sure to select the Text Only option instead of Entire Document. After you click OK, a dialog box may ask you whether to put carriage returns after paragraphs or after every line; choose paragraphs or you'll get a double-spaced program. Quit *MacWrite.*

In Pascal, when you choose Open, the dialog box includes the names of all plain text documents along with all documents you saved as Pascal programs. If you open a text document, Pascal tries to interpret the document as a program. Anything that doesn't conform to Pascal syntax is marked as an error.

Dvorak Keyboard

Q. I use my Macintosh every day for word processing. I recently read that the world's fastest typist uses a Dvorak keyboard on an Apple IIc and that

(continues on page 56)



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(continued from page 53)

the IIc comes with both Dvorak and QWERTY configurations. Is there a way to reconfigure the Mac's keyboard to the Dvorak layout?
Paul A. Locke
New York, New York

A. You can switch the standard Macintosh QWERTY keyboard to a Dvorak layout by adding a desk accessory named Keyboard. You install Keyboard in your System files with Apple's *Font/Desk Accessory Mover* program. The keyboard layout you choose stays in effect until you restart the Mac; changing disks or application programs has no effect. The Key Caps desk accessory shows which layout is active.

Keyboard does diverge from the original Dvorak layout in a few ways. For example, Keyboard doesn't modify the top row of keys. Dr. August Dvorak's original layout changed the order of numerals and symbols in the top row. Also, the Option and Shift-Option keys work the same as with the QWERTY layout.

Keyboard is available for $5 from MAUG on CompuServe and from other user groups.

No Time Out for Printing

Q. Is there something I can do to reduce waiting time while the Macintosh prints a document?
Steve Smith
Pembroke Pines, Florida

A. When printing, the Macintosh stands idle much of the time because it outputs information much faster than the printer can print. However, you can attach a device between the Mac and the printer to act as a reservoir for information waiting to be printed. One kind of device, called a printer buffer, accepts information from the Mac, stores it in its own memory, and sends it out when the printer is ready.

A small printer buffer is built into the Imagewriter. If you watch carefully when printing a *MacPaint* document, you can see the effects of the buffer: the Imagewriter continues printing several seconds after *MacPaint* returns to the drawing window.

You can add an accessory printer buffer that contains more memory than the buffer built into the Imagewriter. The more memory in the buffer, the larger the document that can be stored. If the document being printed is larger than the printer buffer, the Mac waits to trickle information into the buffer at the same rate the printer empties the buffer.

Some printer buffers for the Macintosh are the Printer Optimizer from Applied Creative Technology (800/433-5373) and the Hayes Transet 1000, which also includes a communications buffer, an input/output port expander, and a printer switch (Hayes Microcomputer Products, 404/441-1617).

While a printer buffer reduces the wait during printing, it does not eliminate it. A delay still occurs as the Mac prepares each page for printing.

Some hard disks such as Tecmar's MacDrive or Personal Computer Peripherals' Macbottom contain a built-in program, called a print spooler, that lets you use a portion of the hard disk as a printer buffer. The spooler stores printer-bound information on an unused part of the hard disk and sends the information to the printer on demand.

(continues on page 60)

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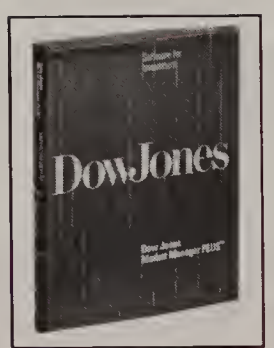

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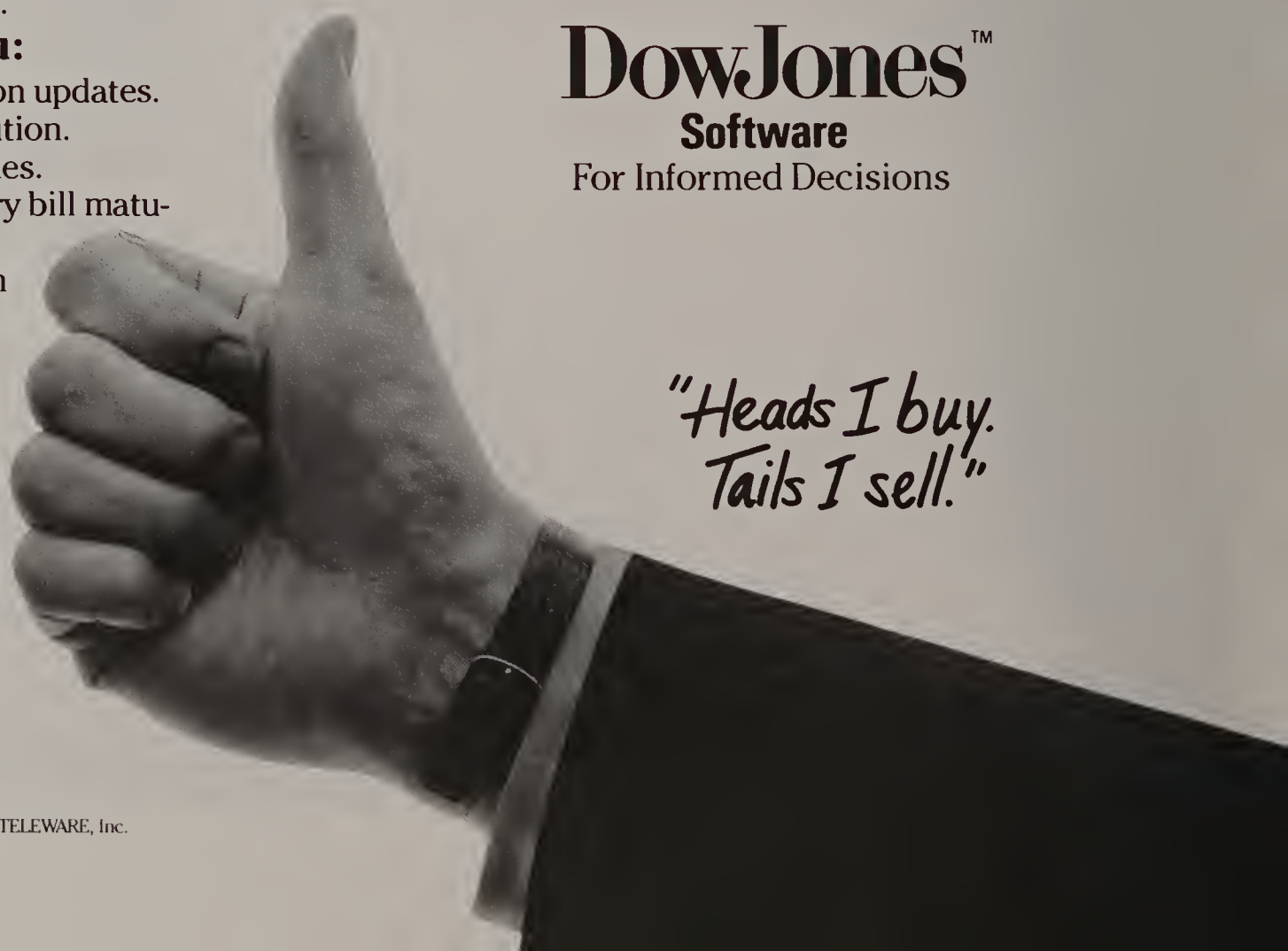

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(continued from page 56)

Another option is print spooler software. *MacMate* (SMB Development Associates, P.O. Box 3082, Chatsworth, CA 91311) allows you to allocate an area of the Macintosh's RAM as a printer buffer and/or a RAM disk.

Transferring Text Documents to a Non-Mac

Q. I use a Macintosh to write rough drafts of legal memos. The secretaries retype my rough drafts into their NBI word processors to create the final drafts. Can I eliminate the retyping by using a modem and appropriate software to send rough drafts from the Macintosh to the NBI word processors?
Marilyn Tanaka
Crestwood, Missouri

A. The key to successful communication between different brands of computers is the communications software, which makes a computer act like a standard communications terminal. For example, *MacTerminal* can make the Macintosh act like a plain teletype, or TTY, terminal, an IBM 3271 terminal, or a DEC VT-100 terminal.

To transfer text documents to the NBI word processor, you need a communications program like *MacTerminal*. To create a plain text document using *MacWrite,* choose the Text Only option in the Save As dialog box.

The NBI communications program that you need is called the Async/Bisync Communications software. You set the terminal programs on the Macintosh and the NBI to act like the same type of terminal; TTY is the simplest. Other compatibility settings such as baud rate, bits per character (word length), and parity must also be the same for both programs. A separate program, the *Macintosh Tailor,* is available from NBI. Running the *Macintosh Tailor* ensures that the NBI's communications parameters are set correctly for the Macintosh.

You can connect the Mac to an NBI word processor via the modems on both machines. You can also connect the two machines together directly by installing a cable from the modem port on the Mac to the modem socket on the NBI word processor. The direct connection requires a *null modem cable,* such as an Imagewriter cable.

For more specific information on terminal program settings, modems, and direct wiring, see "The PC-Mac Transfer" in this issue.

From WordStar to MacWrite

Q. How can I convert *WordStar* files from a KayPro 10 to the Macintosh? I received a *WordStar* text file from a KayPro 10 using *MacTerminal,* but the resulting *MacWrite* document was peppered with the little square that indicates a nonstandard character.
Charles
CompuServe

A. Before you transfer the *WordStar* file to the Macintosh, you need to convert it to a plain text file. Conversion programs that run on computers using the CP/M operating system, such as the KayPro 10, are available from the CP/M User's Group (D/L 1) on CompuServe. USFT1C.BIN and FILT7.BIN are two programs that filter out the unwanted characters. However, once you convert a file using those programs, you lose all

(continues on page 64)

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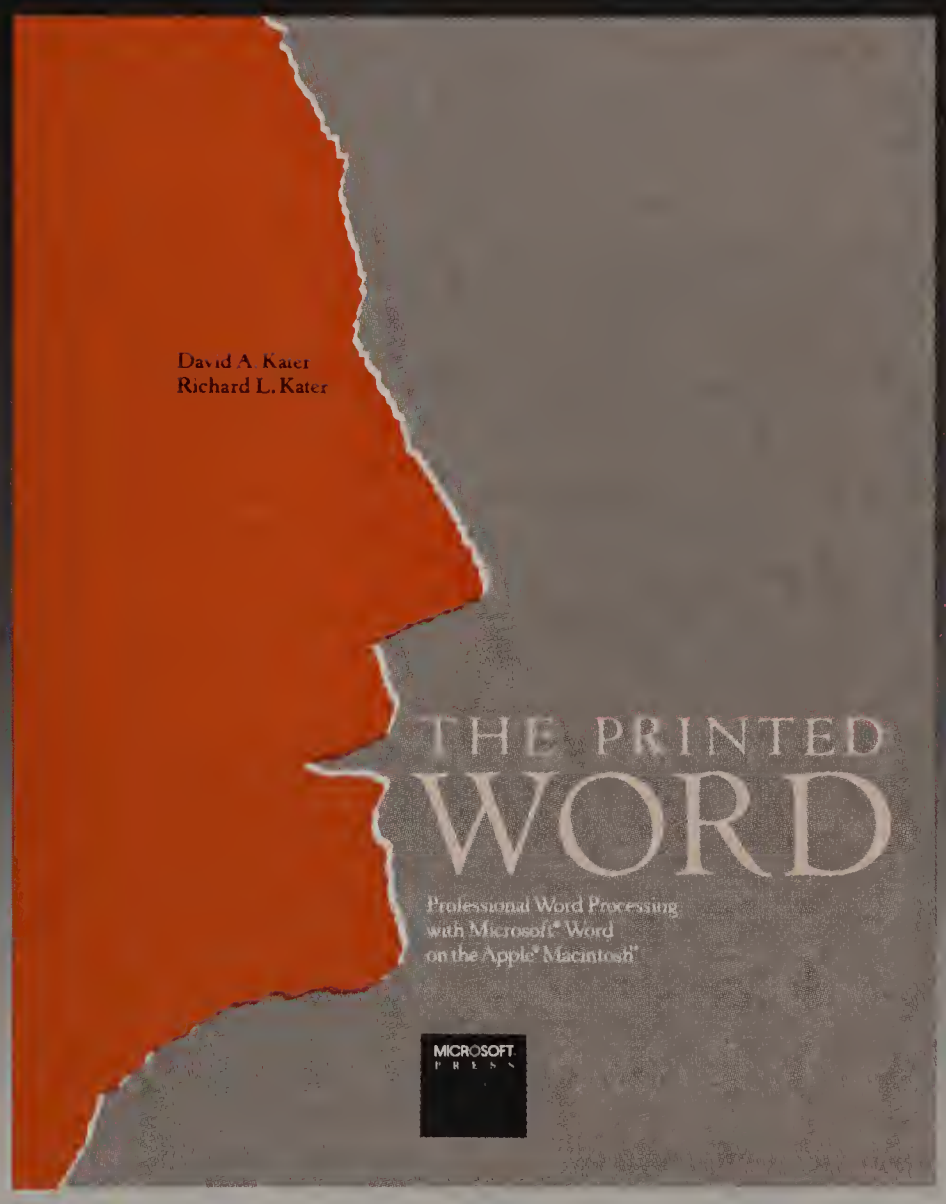

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$89 — **Dollars and Sense** by Monogram — A home accounting package. Just right for the small business. Bar and pie charts, etc.

$104 — **1st Base** by DeskTop — Create your own files. Enter, edit, sort on multiple fields and produce reports from single or joined files.

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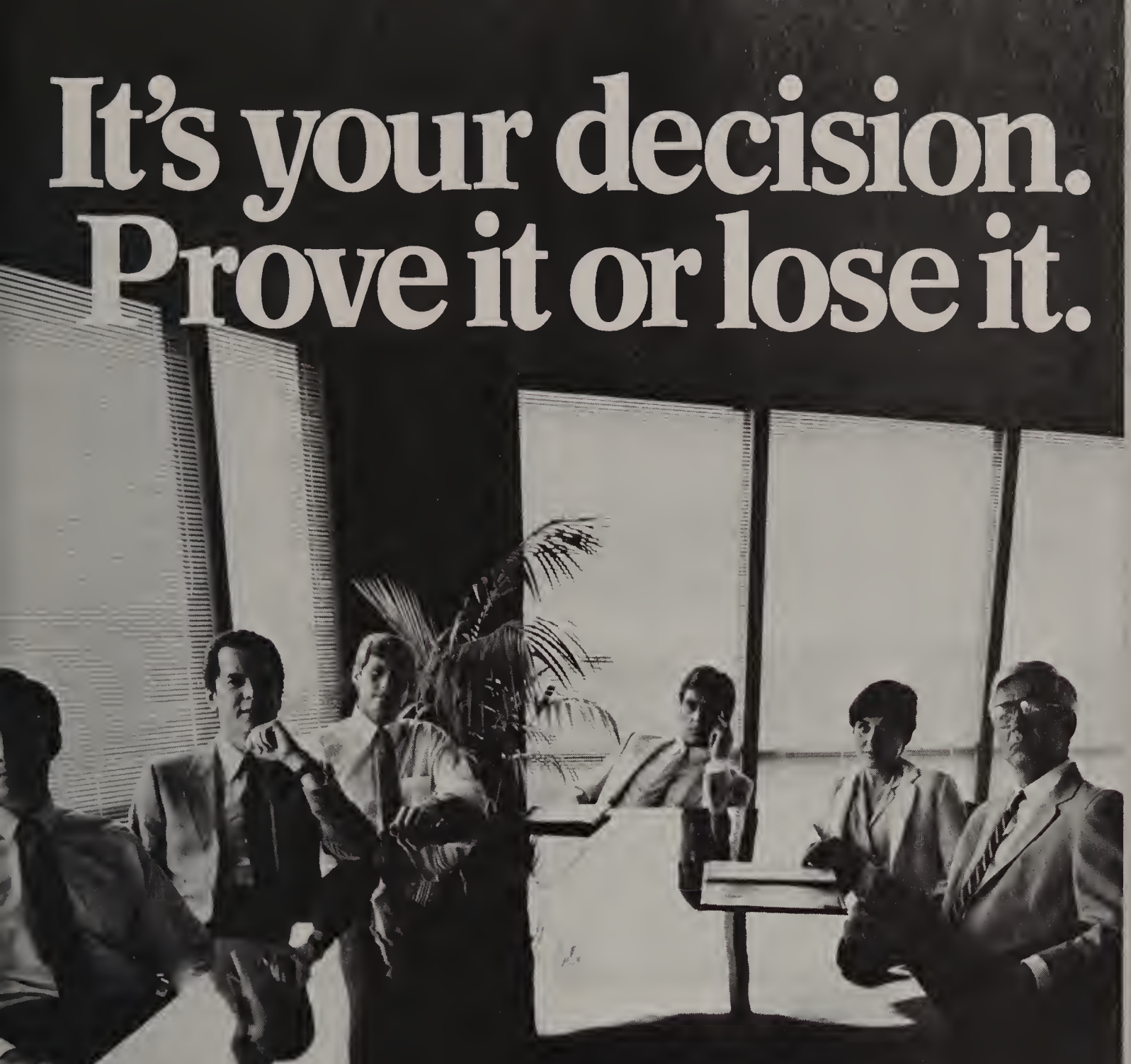

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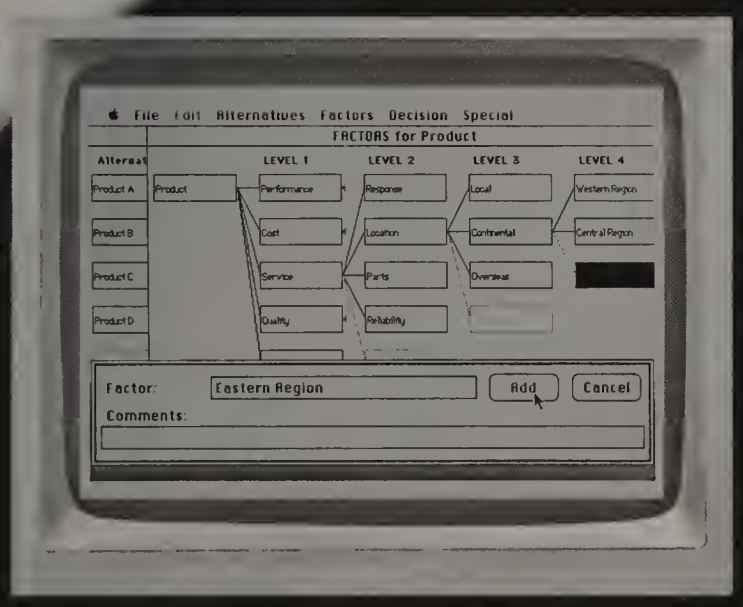

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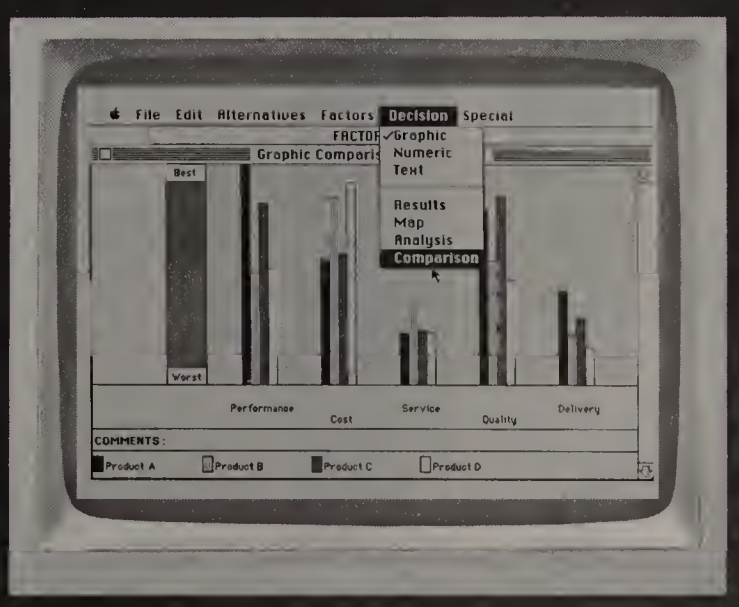

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(continued from page 60)

formatting, such as margin settings, pagination, and special text styles.

After you transfer the converted file to the Macintosh using a communications program like *MacTerminal,* you can use *MacWrite* or *Microsoft Word* to open the file, to change the font and style or the paragraph and document formats, and to save the formatted document.

Printing Larger Charts

Q. With *Microsoft Chart,* can I increase the size of a graph to fill a page?
Joseph W. Bardzil
McMurray, Pennsylvania

A. *Microsoft Chart*'s Page Setup dialog box allows you to specify left, right, top, and bottom margins. The margin settings control the position of the chart on the page and the size of the chart because the chart is scaled to fit between the margins. Therefore, you can decrease the margins to print a larger chart.

Personalized Icons

Q. I want to change the appearance of an application program's icon. Is it possible to use Apple's resource editor to accomplish the task? Is there a better tool?
Michael Tan
Ames, Iowa

A. Apple's *ResEd,* or resource editor, includes an icon editor that you can use to edit an application's icon resource–ICN# (see "Mining the Mac's Hidden Resources," *Macworld,* July 1985).

After changing the icon in the application's resource file, you still must update the invisible Desktop file that contains the images the Finder displays on the desktop. To make the Finder rebuild the Desktop file, eject the disk, discard its icon, and hold down the Option and ⌘ keys while you reinsert the disk–although you will lose your folders by doing so. Another way to rebuild the Desktop file is to use the public-domain program named *PurgeIcons,* which is free from MAUG on CompuServe or from your local user group. *PurgeIcons* updates the Desktop file without losing folders. With both the Option-⌘ trick and the *PurgeIcons* program, documents created by applications that aren't on the disk get blank icons.

The easiest way to edit icons is with the *Icon Switcher* program (PBI Software, 415/349-8765). *Icon Switcher* has a FatBits-style icon editor. The program copies icons from file to file or turns any *MacPaint* document into an icon (see "Macware Reviews" in this issue). You can update the Desktop file, too.

Parallel Printer with Mac

Q. Is there an adapter that lets me connect a parallel daisy wheel printer to the Macintosh's serial port? What software can I use to print underlines, superscripts, and subscripts?
Ismail bin Mustapha
Selangor, Malaysia

A. At least three adapters allow you to use parallel printers with the Macintosh. Mac Port Adapter (Assimilation, 800/MAC-5464, 800/421-0243 in California) is a box about the size of a mouse that plugs directly into the printer or modem port on the Mac. You connect the cable from the Mac Port Adapter to the parallel printer. If the parallel printer is

(continues on page 65)

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off, the Mac Port Adapter routes the output from the Mac to a built-in serial port, to which you can connect an Imagewriter or other serial device. Missing Link (Intrepid Technologies, 805/685-6770) consists of a 9-foot adapter cable, with a Macintosh-style serial plug on one end, a Centronics-style parallel plug on the other end, and a small box in the middle. Microsoft's MacEnhancer is a large box with a cable that plugs into the modem or the printer port. MacEnhancer contains four ports of its own—one Mac-style serial port, two IBM-style serial ports, and one IBM-style parallel port—to which you attach the parallel printer.

To print documents created by most application programs on your daisy wheel printer, you need a special printer driver program such as *LetterWare* (Intrepid Technologies), *Mac Daisywheel Connection* (Assimilation, 800/MAC-5464, 800/421-0243), or *ProPrint* (Creighton Development, 714/476-1973). All three printer drivers print underlines, boldface, superscripts, and subscripts (see "Letter Quality Arrives," *Macworld,* November 1984). The character font and size are determined by what print wheel is in the printer and are not necessarily the same as the font and size displayed on the screen. Since the accessory printer drivers do not reformat the screen to match the size of the print wheel, you usually don't know exactly what a document will look like until you print it. *LetterWare,* however, prints documents that use certain fonts exactly as displayed, so what you see on the screen is what you get on paper.

Microsoft Word contains its own printer drivers. *Word* reformats a document to match the size of the characters on the printer that you select.

MacTelex

Q. What software and hardware do I need to connect my Macintosh to the Telex network so I can use the Mac to transmit and receive Telex messages?
F. Lee
Don Mills, Ontario
Canada

A. To make a Mac into a Telex terminal, you need a modem, a terminal program such as *MacTerminal,* and a subscription to Western Union's EasyLink (800/336-3797) or MCI Mail (800/MCI-2255). Modems and the *MacTerminal* program are described in the book *MacTelecommunications* by Jonathan Erickson and William D. Cramer (Osborne/McGraw-Hill, 1985). The book *Online,* by Steve Lambert (Microsoft Press, 1985), describes modems and terminal programs in general terms. *Online* includes subscriptions to EasyLink, MCI Mail, and other on-line services and explains how to send Telexes.

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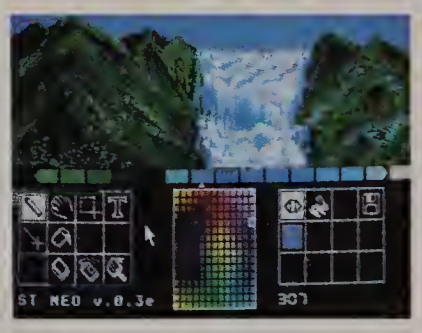

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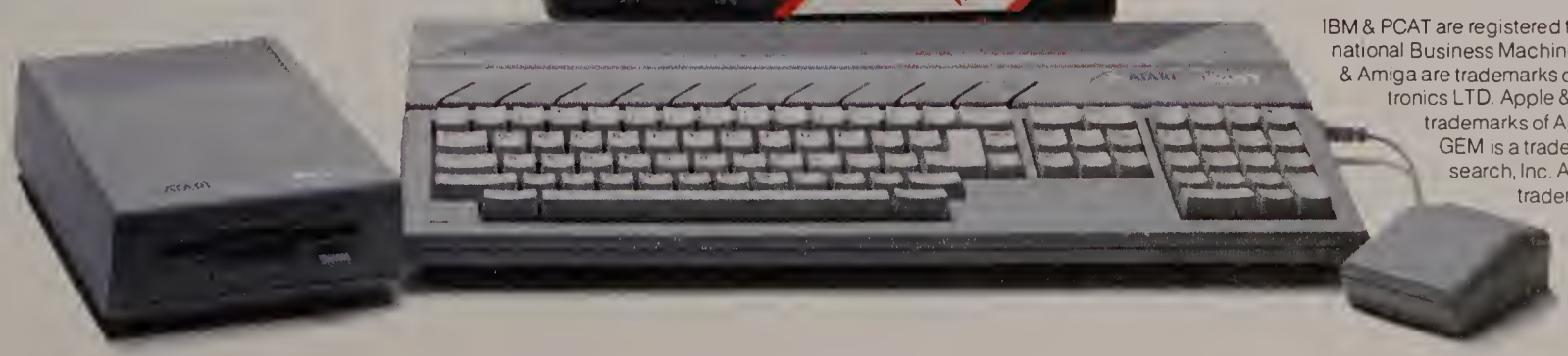
Screen Resolution (Non-Interlaced Mode) Color Monochrome	 640 x 200 640 x 400	 640 x 200 720 x 350**	 None 512 x 342	 640 x 200*** 640 x 200***
Color Output	Yes	Optional	None	Yes
Number of Colors	512	16	None	4096
Disk Drive	3.5"	5.25"	3.5"	3.5"
Built-in Hard Disk (DMA) Port	Yes	Yes	No	No
MIDI Interface	Yes	No	No	No
No. of Sound Voices	3	1	4	4

**With optional monochrome board (non bit-mapped)
***Interlace Mode – 640 x 400



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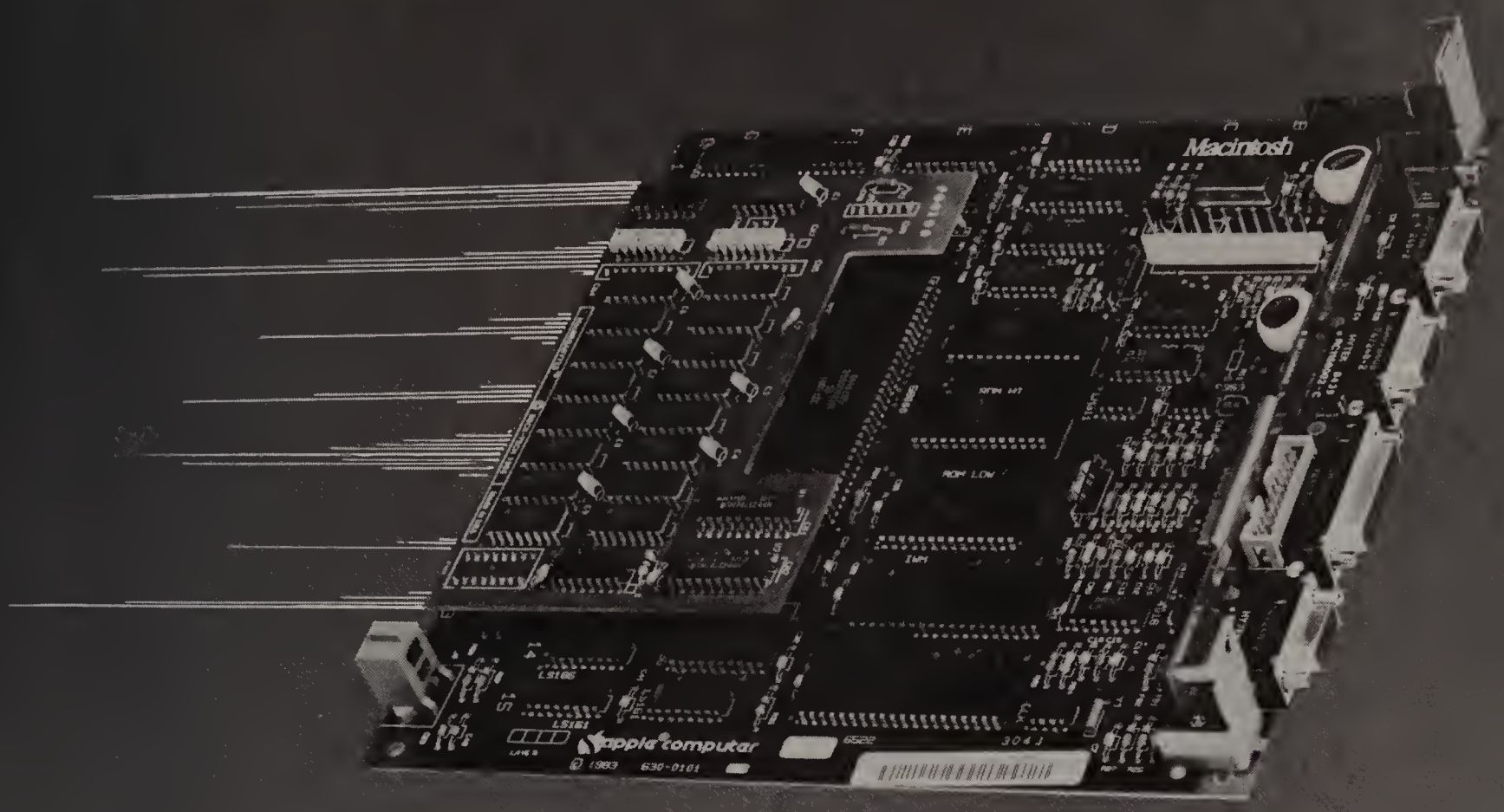

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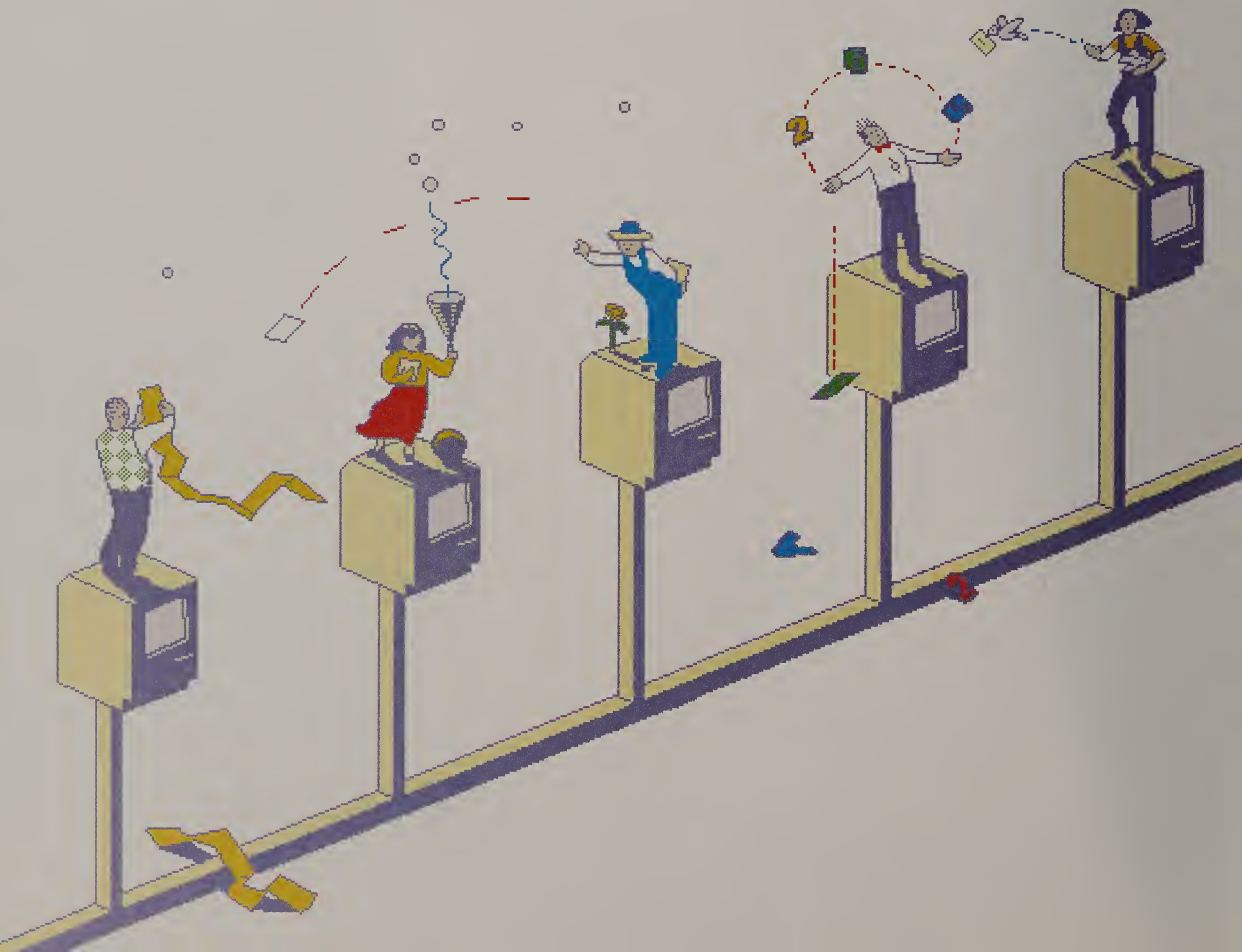
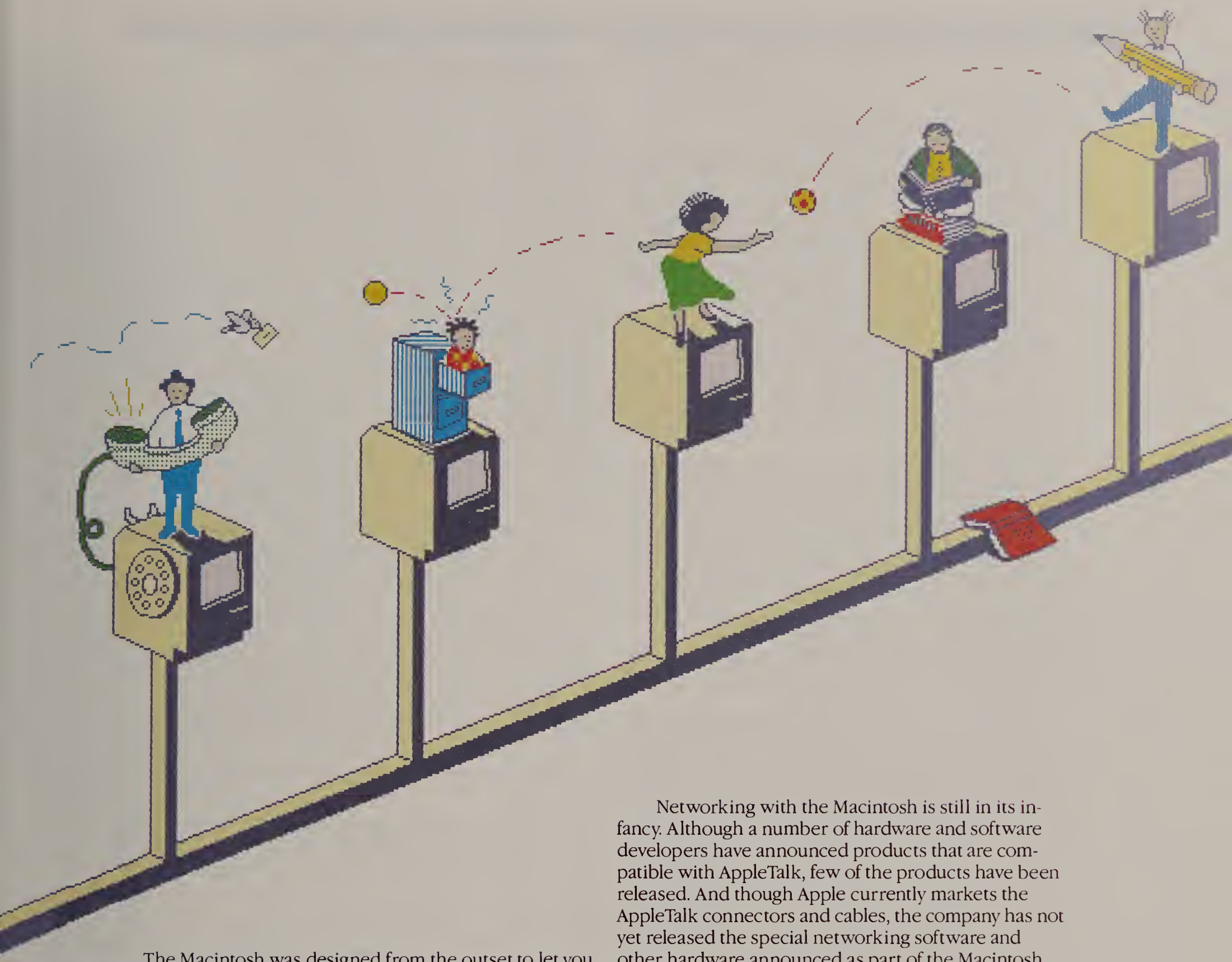
Networks Considered

Jeremy Joan Hewes





The Macintosh was designed from the outset to let you link up with other computers through the AppleTalk local area network. Most computers, including the IBM Personal Computer, require the purchase of a circuit board to permit a network connection, but the Macintosh has the necessary electronics built in. If you work with other people who use computers, networks allow you to share information and expensive hardware. For example, by linking computers, an organization can eliminate the need for every Macintosh in the network to have its own printer and second disk drive. Instead, a group of machines can share one large-capacity hard disk and send data to a central printer. Networking provides a step up from work in isolation on a single computer, without the inconvenience of being tethered to a mainframe. Though you share data and hardware, you maintain independent control over the Macintosh for routine tasks.

Networking with the Macintosh is still in its infancy. Although a number of hardware and software developers have announced products that are compatible with AppleTalk, few of the products have been released. And though Apple currently markets the AppleTalk connectors and cables, the company has not yet released the special networking software and other hardware announced as part of the Macintosh Office.

This early stage in Macintosh networking is a good time to take a general look at the subject. This overview emphasizes the benefits networking can bring to an organization and the factors you should keep in mind when deciding whether to add networking to a computer's capabilities.

Network Fundamentals

Simply put, a network is a group of two or more computers linked by cable. In addition to computers, a network almost always contains shared hardware such

as printers, storage devices, and modems (see Figure 1). All interactivity among the computers connected to the network is controlled by specialized software. The networking software must be sophisticated to keep track of information sent simultaneously among the connected computers and other devices.

Regardless of the software you use, AppleTalk will be at the heart of a network. In design and conception, AppleTalk is like the Macintosh itself–a personal tool that is fundamentally easy to use yet can be expanded to handle a wide range of sophisticated activities. You can use the AppleTalk connectors and cable simply to operate the LaserWriter or to implement electronic mail among a group of computers. Or you can join hundreds of machines, linking Macs to mainframes and AppleTalk networks to one another or even to other networks. Because it lets you start out with solutions to simple networking problems before progressing to complexities, AppleTalk is the ideal way to ease into networking.

Designs for networking hardware and software abound, and no one design dominates. The variations are determined by factors such as the way computers and other hardware are arranged in relation to each other, the type of cable that connects the equipment, the speed at which data travels between attached devices, and the format and signals used to keep data from being garbled in transit. Considering the differences in design, it's not surprising that some of the most popular networking products provide gateways for linking dissimilar types of computers and networks.

Efficiency is one of the most obvious advantages of linking a group of computers together. By writing memos at the keyboard and sending them to a number of co-workers simultaneously via electronic mail, you save your time and the time of the staff person who would otherwise duplicate and deliver the memos. Because you can answer messages you receive in an electronic mailbox as soon as you read them on the screen, you are likely to stay in close touch with your associates. You are less likely to bury an urgent request from a colleague in the pile of papers on your desk because you can reply instantly (see Figure 2).

Share and Share Alike

The most immediate benefits of networking involve sharing both information and resources. By sharing information stored in a central database, network members coordinate their efforts and avoid duplicating the task of maintaining a database. With the appropriate network software, sales figures and other essential information could be readily available in a shared file system. Network members could view and copy information from the database. A limited group of members could also make changes in the master files.

Programs as well as documents can be shared on a network. Thus, you could use a data management program on the network to record sales figures from your department and search the database to compile subsets of related information. Next, you might analyze the data you've retrieved with a spreadsheet and a template that a co-worker has set up for figuring profits on gross sales. Once again, the network prevents duplicated effort by letting members share the benefits of each other's labor. Also, if all department managers used the same programs and templates for data entry, retrieval, and analysis, an organization would have a means of comparing departmental performance.

Sharing software, however, requires that programs be specially written so two or more people can use a single program at once. At present only a few software publishers have announced that they are developing programs for networks. As AppleTalk becomes established among businesses, it is likely that multiple-access software will become more common.

In most networks, shared software goes hand in hand with shared hardware. For instance, the files that

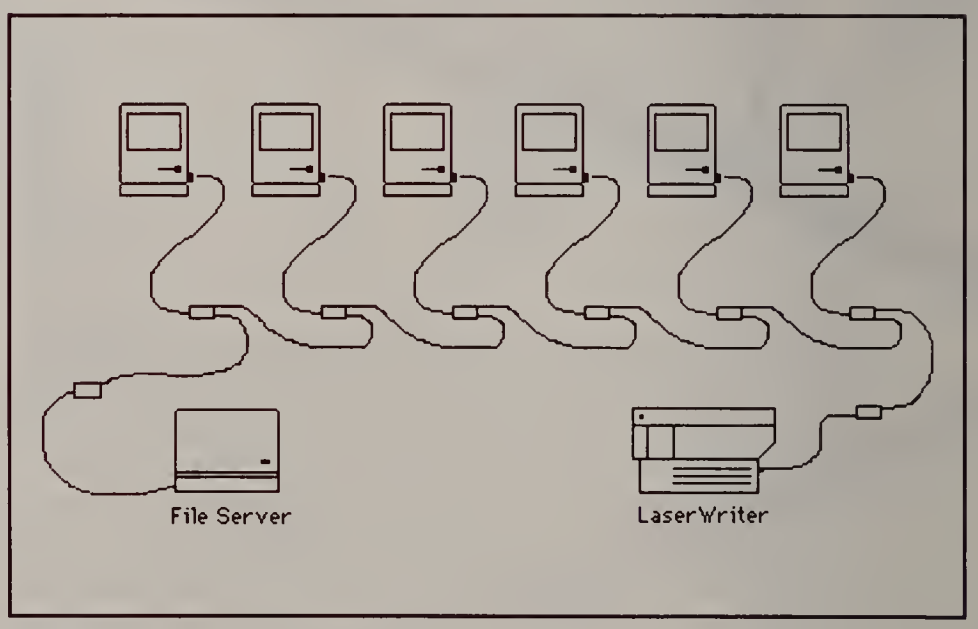


Figure 1

A network is a collection of two or more computers, as well as shared hardware such as printers or hard disks, linked by cable. The diagram shows a possible configuration for the AppleTalk network.

Networking PCs and Macs

One compelling reason for creating a network is to overcome incompatibilities between the Macintosh and other personal computers. Networks often consist of several computers cabled to a high-capacity hard disk, called a central file server. The central file server is divided into separate areas, or partitions, for different types of computers. For example, one partition might be reserved for Macintosh files and another for IBM PC files.

One of the drawbacks of partitioning is that you must run a special utility program to transfer files from one partition to another in order to share files. Because of the time it takes to copy a file and the inefficiency of multiple copies of the same file, this method is not much better than sharing files among individual computers.

The Transcendental Operating System (TOPS) network takes a different approach by allowing Macintoshes to deal directly with IBM PCs. Instead of requiring a centralized file server, TOPS lets each computer access files on every other computer in the network.

Each computer in the network treats other disk drives as if they were attached directly to the computer. For instance, an IBM PC disk shows up as a disk icon on the Macintosh's desktop. When you open the disk icon, a window appears, filled with icons representing the files on the PC's disk. With Finder 4.1, subdirectories on a PC disk can be displayed as separate volumes (disks) on the Mac's desktop. On the IBM PC, you access a Macintosh disk as you would another drive. The Directory command lists the names of the files from the Mac disk on the PC's screen.

Files can be moved easily from one disk on the network to another. From an IBM PC, you use the Copy command. From a Macintosh, you drag the desired icon from one disk window to another. You could, for example, copy *MacWrite* onto an IBM PC hard disk. Then you could open that copy of *MacWrite* from any Macintosh in the network.

The TOPS network resolves the problem of sharing data between the PC and the Mac (see "The PC-Mac Transfer" in this issue). For example, the following scenario is possible with the TOPS network: You use *MacWrite* to create a first draft of a report and save it on the Mac's hard disk. Later, a colleague, who has a Mac, reads and edits the draft, saving it on the hard disk as a plain text file. The next morning the secretary uses *Microsoft Word* on an IBM PC XT to edit the plain text document stored on the Mac's hard disk. The secretary saves the final draft as a formatted *Word* file on the XT's hard disk. Later that day you open the formatted *Word* file on the XT using *Word* on the Mac, paste in the illustrations you prepared using *MacDraw,* and save the result as a formatted *Word* document on the Macintosh's hard disk. Finally, you print the illustrated report using the LaserWriter attached to the network.

However, all this flexibility has drawbacks of its own. You have to keep track of who modified what and where the latest version of the document is.

The performance of the network depends on the number of Macintoshes and IBM PCs connected and the amount of work being done at each network computer. With two Macintoshes and an IBM PC XT on the network, accessing a file stored on the XT's hard disk from the Macintosh is faster than accessing the file from the Mac's built-in disk drive. You can read files from the hard disk even faster with an IBM PC AT.

The rate at which information is transferred is 800,000 bits (about 25 double-spaced pages of text) per second. TOPS software occupies about 15K of memory on each participating Macintosh and about 50K on each PC.

The TOPS network software must be installed on each Macintosh and IBM PC in the network. Although you must plug Centram's AppleTalk board into one of the PC's expansion slots, the Mac requires no additional hardware. Up to 32 computers can be cabled together with the AppleTalk connectors and cables.

TOPS
Centram Systems West, Inc.
2372 Ellsworth Ave.
Berkeley, CA 94704
415/644-8244
List price: TOPS software for the Macintosh, under $100; IBM PC board and software, $300

all network members can use are stored in a device to which everyone has access–usually a large-capacity hard disk. Generally hard disks operate significantly faster than the floppy disk drive in the Macintosh, although the precise gain in speed is determined by the network's software and the amount of traffic on the network. The AppleTalk network utilizes several shared-hardware devices, including a *file server*. In addition to including a hard disk, a file server contains its own controlling computer and software. The file server is well suited for sharing centrally stored information among network members.

In certain organizations multiple access to files may be impractical or even undesirable. Yet a shared file server is still worthwhile because all people using the network can have their own space on the hard disk, which is typically capable of storing 20 to 40 megabytes of information. This storage scheme provides network members with the benefits of mass storage at significantly less expense than if members purchased their own hard disks. Management of shared hard disk space is handled by the networking software, which can divide the disk into partitions that are assigned to individual stations.

Another way networks provide members with the benefits of shared hardware is the LaserWriter. The LaserWriter produces high-resolution text and graphics with versatility and a quality of print on par with typesetting. (See "The Laser's Edge" in the February 1985 *Macworld* for more about the printer.)

Although at $7000 the LaserWriter is too costly for most individuals, a network permits several people to share the cost, and consequently the benefits, of the printer. The LaserWriter is a desirable addition to a network because it provides high-quality printing, producing impressive presentations and professional-looking documents. Laser printers also print much more quietly than Imagewriters and other impact printers.

Connecting Networks

One other benefit of networking is that it allows you to exchange data and, in some cases, use programs with dissimilar types of computers and even incompatible networks. If your company has a mainframe computer and another personal computer network in addition to AppleTalk, you can use the Macintosh as a gateway to the mainframe and the other network.

Similarly, two or more AppleTalk networks, each consisting of up to 32 Macintoshes, printers, and other pieces of hardware, can be linked through a hardware and software *bridge*. Apple has also announced a plug-in circuit board for the IBM PC that lets the PC operate as part of an AppleTalk network and print files on the LaserWriter.

Networking Considerations

By now you should have a good idea of what a Macintosh network can add to a computer system. But networks can be complex, and their features vary. Consequently, choosing a product from among the 50-plus products being developed for the AppleTalk network is no easy task.

Although Apple has standardized network features such as the speed of data transfer (a maximum of 29K per second), the type of connector (a small, inexpensive module), and the type of cable (twisted-pair, similar to telephone wire), the hardware and software available for AppleTalk range from a simple electronic mail package to elaborate file-handling systems. The following considerations should help you find the products best suited to your needs.

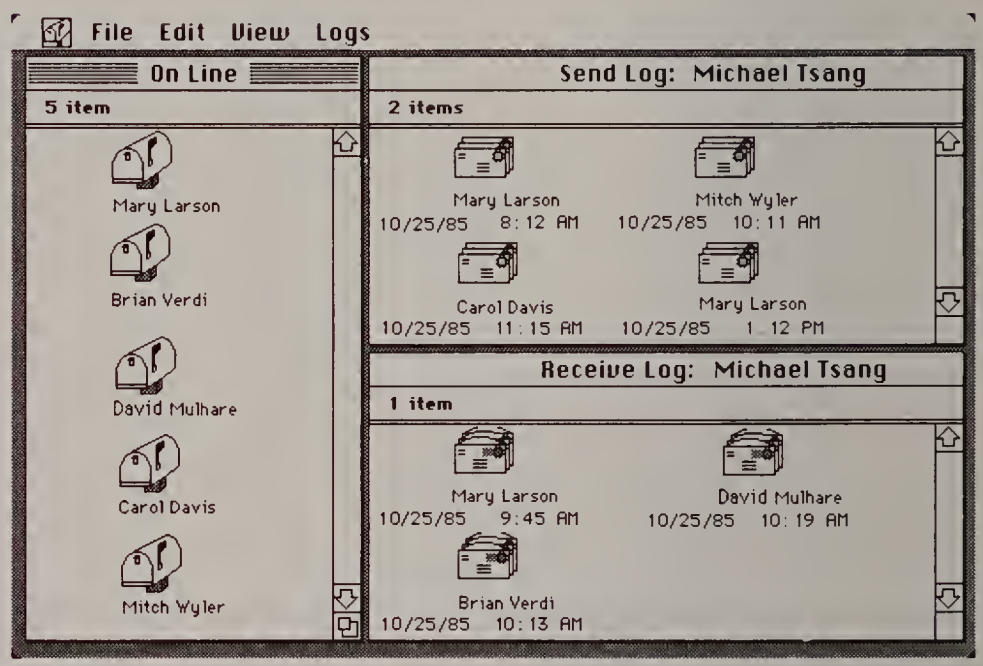


Figure 2

Electronic mail software permits network members to communicate with each other via their computers. Videx's Mail Center *electronic mail program permits members listed in the On Line window to send and receive messages, which are recorded in the Send and Receive logs.*

One of the hallmarks of the Macintosh is its effective use of icons, pull-down menus, and the mouse to make computing easy. Networking software for the Mac should be equally straightforward, providing simple and appropriate icons, menus, and instructions.

Security is an important issue in some networking situations. You may want some personnel to have access to confidential information that should not be shared with other staff who use the network. In that case it's important to find out if the network-controlling software provides a method of assigning passwords to individual files or to specific areas of a shared hard disk. If not, does the software have any means by which network members can keep some files private? Privacy might be obtained by creating individual file directories or assigning certain areas of a hard disk to different network members.

If the file-managing software does not designate separate areas on the hard disk for individuals' files, and passwords are not used to identify each member's files, the potential exists for confusion and mislabeling of files. Even if all members use their name or initials as part of each file name, they might have to search among hundreds of files on a hard disk to locate a particular document. It's hard enough to remember the contents of a file you named last week, so imagine trying to locate your own electronic needle in the haystack of files on an entire hard disk.

Yet another level of file management is required if the networking software permits multiple access to some or all of the documents centrally stored on a hard disk. If a number of people can use a file, can each of them change it? If so, must they rename the file with each use to reflect the changes? Or should the software provide a mechanism to allow many people to read and copy files but prevent any changes without a special code or password?

File sharing issues become even more complex if you want a network to allow people to share information simultaneously. If several people can use a file at once, what happens when two or more users make changes and try to save the file at the same time? Whose changes should be saved, and what happens to the rest of the file? Again, the network's software determines those capabilities.

Finally, an organization may have to assign one person to direct network operations and train members, particularly if a network includes software that is difficult to use or if the network links to other networks or mainframe computers. Even comparatively simple networks may require at least the part-time attention of an overseer.

Obviously the potential for problems is great when a group of people use the same resources and information. For the present, the complexity of implementing a fully featured network outweighs the advantages a network offers to most offices. But surely one day networks will live up to their potential in a way that everyone, even nonexperts, can appreciate. Until that time, benefits such as electronic mail and communal hard disks add efficiency to office operations. Most important, exploring the possibilities of a network now will help you understand how sharing information among a group of computers is a natural extension of the Macintosh's power. □

■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ *Jeremy Joan Hewes is a Contributing Editor of* Macworld.

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The Megabyte Managers

Jim Heid

Inefficient filing systems have provided comedians with material ever since the invention of the filing cabinet. Bud Abbott asks Lou Costello for the Fields file, and Costello pulls a folder out of the U *drawer. When asked why the file was in the* U *drawer, he quips, "Because Mr. Fields is one of the ugliest people I've ever seen."*

Unfortunately, when hard disks first appeared on dealers' shelves, the slow performance of version 1.1 of the Finder and deficient hard disk software provided little comic relief for Macintosh owners who ran into limitations shortly after purchasing hard disks. Hoping to store the equivalent of 20 to 25 floppy disks, hard disk pioneers were disappointed to discover that they could not store more than 100 to 150 files on a disk–about a month's worth of business correspondence.

Worse yet, as the number of documents on a hard disk grew, the desktop became more cluttered. Grouping related documents into folders neatened the desktop, but each folder took up space on the hard disk's directory, decreasing the number of files that could be stored. It was a situation Abbott and Costello could have built a routine around, but few hard disk owners were laughing.

Apple has now released version 4.1 of the Finder, which greatly speeds up file operations, particularly with a hard disk. In addition, hard disk manufacturers have taken advantage of a method called partitioning to improve performance. Partitioning divides a hard disk into smaller chunks called volumes and lets the Finder treat each volume as though it were a separate disk.

TECMAR
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Partitioning also lets you organize programs and documents logically. You might create a volume named Applications for frequently used programs, a volume named Correspondence for letters and memos, and one named Pictures for *MacPaint* and *Microsoft Chart* documents.

You use an application called a volume manager to tell the Finder which volumes you want to appear on the desktop. By opening and closing volumes, a volume manager performs the electronic equivalent of inserting and ejecting disks. By opening only the volumes you need for a given computing task, you reduce memory and processing demands on the Mac, boosting its performance.

This review looks at Quark Peripherals' QC10, General Computer Company's HyperDrive, and Iomega Corporation's Bernoulli Box and reexamines one previously reviewed hard disk that now provides partitioning software: Tecmar's MacDrive (see "Shifting into Overdrive," *Macworld,* December 1984). "Hard Disks at a Glance" shows the vital statistics of each, along with results of performance tests.

QC10
Quark Peripherals' QC10 connects directly to the Macintosh's external drive connector for speedier performance. It also works with Apple IIe and Apple III computers, but only one computer at a time.

QC10

Of the hard disks reviewed here, Quark's QC10 is the only one that connects to the Macintosh external drive connector instead of to the printer or modem port. This gives the QC10 a speed advantage over most of its competition and leaves the printer and modem ports free. Unfortunately, you can't start the Mac directly from the QC10. You start with Quark's companion floppy disk, which tells the Mac's operating system the QC10 is connected.

The QC10 offers another advantage if you also own an Apple IIe or an Apple III: you can create partitions for the Macintosh and for other Apple computers and connect the QC10 to any of them. You could, for example, set aside a third of a hard disk for the Macintosh, another third for the Apple IIe, and the last third for the Apple III. But you can't connect the hard disk to all three at once because the cables are different, as are the settings of two switches on the rear panel of the QC10. Neither can you share files between the Macintosh and the Apple IIe and Apple III. Still, the QC10's flexibility makes it appealing if you own several Apples.

The QC10's volume manager software lets you create volumes as small as 33K and as large as the remaining amount of hard disk space. The volume manager also provides security by letting you specify access restrictions for each volume. For example, you can allow other people to read but not write to a volume. You can also specify files that may not be deleted, and you can protect files with a password. Finally, the volume manager's auto-mount feature lets you specify whether or not a volume appears on the desktop immediately upon startup, eliminating the need to run the volume manager each time you start the Macintosh. For example, a BASIC programmer would probably want the BASIC volume and a program volume to automatically open, while an accountant would want a *Multiplan* volume to appear upon startup.

Quark's Quirk

With one exception the QC10 works well with the Macintosh. When you copy Microsoft's copy-protected *Multiplan* version 1.02 to the hard disk and open it, the Macintosh rejects the hard disk volume where *Multiplan* resides and asks for the master disk. The problem occurs because *Multiplan* performs as if it's ejecting a floppy disk when in reality it's attempting to eject a hard disk volume. At this point the Macintosh waits for you to insert the master disk into the hard disk drive, which is impossible. Tecmar's MacDrive suffers from the same idiosyncracy.

Fortunately, a simple, though annoying, solution exists. To use *Multiplan* on the QC10 or the MacDrive, insert the *Multiplan* master disk, start the program from that disk, and then immediately quit. When the desktop reappears, eject the master disk and start the hard disk's copy. Since *Multiplan* determines that you're a legal owner when you start the master copy, you won't be asked to insert the master again, and the program will work normally.

Microsoft engineers are aware of *Multiplan*'s ejecting problem. *Word, File,* and *Excel*—three similarly protected Microsoft products released some time after *Multiplan*—do work properly. Until *Multiplan* is revised, however, use the roundabout startup method on the QC10 or Tecmar drive.

QC10 Report Card

While the QC10's documentation wouldn't win any awards for clarity or organization, the product's major shortcoming is the lack of software to let you

back up and restore files. A Quark engineer reported that the firm is working on such a program but declined to give an availability date. Until the program becomes available, I can't recommend the QC10 for people who expect to create files larger than 400K.

But for everyone else, and especially for anyone owning a Macintosh and an Apple IIe or III, the QC10 is worth considering. Besides its ability to work with Apples other than the Macintosh, the unit's strengths include its use of the Mac's external disk connector and a volume manager that provides security.

HyperDrive

General Computer Company's HyperDrive is the sports sedan of hard disks. Sitting idle, a HyperDrive-equipped Mac looks as unimposing and conservative as any other Macintosh. When the light turns green, however, the HyperDrive is off and running.

The secret to the HyperDrive's swift performance and nimble handling is that the hard disk is installed inside the Macintosh and connects directly to the Macintosh's 68000 microprocessor. Because it goes straight to the processor for its data instead of communicating through one of the Mac's serial connectors, the HyperDrive has a speed advantage no external hard disk can match.

Because the hard disk is installed inside the Macintosh, HyperDrive also offers convenience. You don't have to trade portability for mass storage, and the Mac's external connectors remain free for other devices. Best of all, you can start your Macintosh directly from the hard disk.

Standard Equipment

Just as sports cars come equipped with stereos and power-adjustable seats, HyperDrive comes with a complete assortment of features not offered by its competitors. The Manager application lets you create and delete volumes in the form of file drawers, assign passwords that must be supplied before a given drawer is opened, and test or initialize the hard disk.

Unlike the other products reviewed here, the HyperDrive doesn't make you specify the size of a volume in advance. Instead, the HyperDrive software gives a new drawer 250K to work with, then provides additional 250K chunks as you add files. Like a balloon grows or shrinks as you add or remove air, HyperDrive's drawers expand or contract as you add or remove files, making it unnecessary to decide in advance how large a drawer should be.

The HyperDrive software also makes it easy to open drawers. Instead of having to run a volume manager every time you want to open volumes, you use a desk accessory called Drawers that lets you open drawers from any application. The Drawers desk accessory adds a Drawers menu to the menu bar; you open drawers by choosing their names. The desk accessory approach to volume access makes it unnecessary to quit an application, run the volume manager, quit, restart the application, and continue–just because the document you wanted was stored in a closed drawer.

HyperDrive
From the outside it looks like an ordinary Macintosh, but remove the cabinet and you can see the HyperDrive–the dark box under the metal sheath at the back of the Mac. A recent agreement means that the installation of a HyperDrive no longer voids the Apple warranty for the Mac.

Security Measures

HyperDrive takes security seriously. In addition to assigning passwords to drawers, you can use the Security application software to scramble individual files, making them inaccessible even to people experienced with computers. The Security application scrambles a file's contents according to a password key that you provide. The encryption technique is so secure, the HyperDrive documentation warns, that even General Computer cannot unscramble a file whose key you've forgotten.

Another HyperDrive security measure is the Backup application. The program's Full Backup command makes backups of entire drawers, while the Incremental Backup command copies only the files that you've modified since the last backup session. You can also use the Compare menu to compare two files to determine if the documents on the backup disks match their hard disk counterparts.

Tough Enough

I was impressed by the HyperDrive's speed and security measures but initially skeptical of its reliability. Since little room is left inside a Macintosh after you install the HyperDrive, I was concerned that the extra heat produced by the hard disk could lead to hardware failure and that the hard disk's delicate surface could be damaged during office-to-home commutes.

The first HyperDrive I received was damaged by an overnight courier and arrived unable to do anything but rattle and display the frowning Macintosh icon. The second unit, however, arrived intact and remained that way over a five-month test period that saw nearly constant use, a road trip, and a torture test that involved dropping the unit a few inches while the hard

disk was being accessed. Based on these experiences, I've concluded that the unit's quiet fan dispels the extra heat and that a HyperDrive-equipped Mac is sturdy enough to withstand the bumps of everyday use, though extra padding during shipment wouldn't hurt.

The Conversion Process

You equip the Macintosh with a HyperDrive by taking the computer to any of General Computer's dealers. The dealer increases the machine's memory to 512K if it's a 128K Mac, installs the hard disk, affixes a HyperDrive sticker to the front of the case, and provides a 90-day warranty. A one-year warranty is available for an additional $350.

If HyperDrive's internal approach presents a disadvantage, it's that the entire computer must go to the shop if a problem develops with the hard disk. However, General Computer has made getting repairs under warranty easy. Since installation of a HyperDrive no longer voids the Apple warranty, you can now take your Macintosh to any authorized Apple dealer for warranty repair. And though Apple has not taken an official stand on ROM upgrades, HyperDrive owners may also be eligible for the new ROMs when they become available.

All in all, the HyperDrive's advantages–its portability, the Drawers desk accessory, the flexible approach to drawer size, and the unique security application–far outweigh the disadvantages. The HyperDrive-and-Macintosh combination performs like the two were meant for each other. It's the happiest marriage of the Macintosh and a hard disk I've seen yet.

Bernoulli Box

Iomega's Bernoulli Box is a hard disk that isn't. Specifically, the magnetic recording medium used by the Bernoulli Box is not physically rigid and fixed in place like a conventional hard disk. Instead, the medium is flexible like a floppy disk. It is drawn toward the drive's magnetic head with an ingenious technique that borrows from fluid dynamics principles dis-

The Bernoulli Box is a hard disk that isn't; it's a flexible disk in a removable cartridge.

covered by Daniel Bernoulli in the 1700s. The medium is encased in a removable cartridge, allowing you to remove and lock up valuable data at the end of the day.

The removable medium has other advantages. When you fill one 5-megabyte cartridge, you can remove it and install a new one instead of freeing space by deleting old files. More significantly, since the medium is flexible, Bernoulli Box owners need not fear head crash–the damage a speck of dust can cause if it lands between the drive's head and the fragile, rigid surface of a conventional hard disk. If an intruder makes its way into a Bernoulli cartridge, the medium flexes to make room for it. The air pressure generated by the spinning disk then blows the invader away.

The Bernoulli Box also offers a print spooling feature that lets you continue using the Macintosh while simultaneously printing documents. (*Spool* is an acronym for simultaneous peripheral operations on line, and it usually refers to a computer's ability to print a document while performing other tasks.) When the spooler software is active, the Bernoulli Box intercepts data destined for the printer and stores it on the cartridge. When your application has sent all the data to the cartridge, it concludes that printing is finished and returns control of the Mac to you. The Bernoulli Box then sends the data to the printer in bursts so it appears the Mac is doing two things at once.

Performance Limits

While the Bernoulli Box has advantages over the competition, it has some drawbacks, too. The unit's performance on the *Macworld* test track was the slowest of the pack. Also, the Bernoulli Box's approach to

Bernoulli Box
The design of this unique mass-storage device makes use of principles of fluid dynamics discovered in the 1700s. Because of the device's removable cartridge, you can easily expand the storage capacity by adding new cartridges.

disk partitioning offers far less flexibility than that of the other products reviewed here. You specify whether each cartridge is to be formatted as one 5-megabyte volume or as five 1-megabyte volumes. I'd prefer to be able to specify the size of each volume. Furthermore, if you select the single-volume option and decide later that you need multiple volumes, you must copy the cartridge's contents to floppies and then reformat the entire cartridge.

Another drawback to the Bernoulli Box is that you must eject partitioned cartridges by running a special program that ejects the disk from the startup floppy disk. It's inconvenient enough to have to start a mass storage system with a floppy disk, but to be forced to shut down with one is downright unacceptable. In practice I was able to use the Shut Down command in version 4.1 of the Finder without losing data, though the cartridge was not physically ejected.

Closing the Box

The Bernoulli Box's major strength is the reliability of its unique recording medium, which makes it ideal for a dusty environment that could cause problems for conventional hard disks. Its other strong points include the print spooling feature and the flexibility and security that removable cartridges offer.

Unfortunately, the Bernoulli Box's approach to disk partitioning limits the way you can organize your storage space. Moreover, the unit could be faster, and its cooling fan quieter. If you want a drive that uses a removable cartridge medium, consider the removable-cartridge versions of Tecmar's MacDrive first. In its present form, the Bernoulli Box is my second choice for Macintosh mass storage.

MacDrive

A veteran Macintosh hard disk, Tecmar's MacDrive has come a long way in overcoming its initial drawbacks. The MacDrive now includes a built-in serial port that acts as the Macintosh's printer port, which is dedicated to the drive's connector when used with the MacDrive. One of the early limitations of the MacDrive was its inability to partition the disk into volumes. Tecmar's partitioning software now allows you to allocate up to 20 volumes on the disk, although the amount of memory in the Macintosh limits the number of volumes you can open. In a 512K Mac you can have four to five volumes open at once. Another nice addition is print spooling software that frees the computer when you are printing.

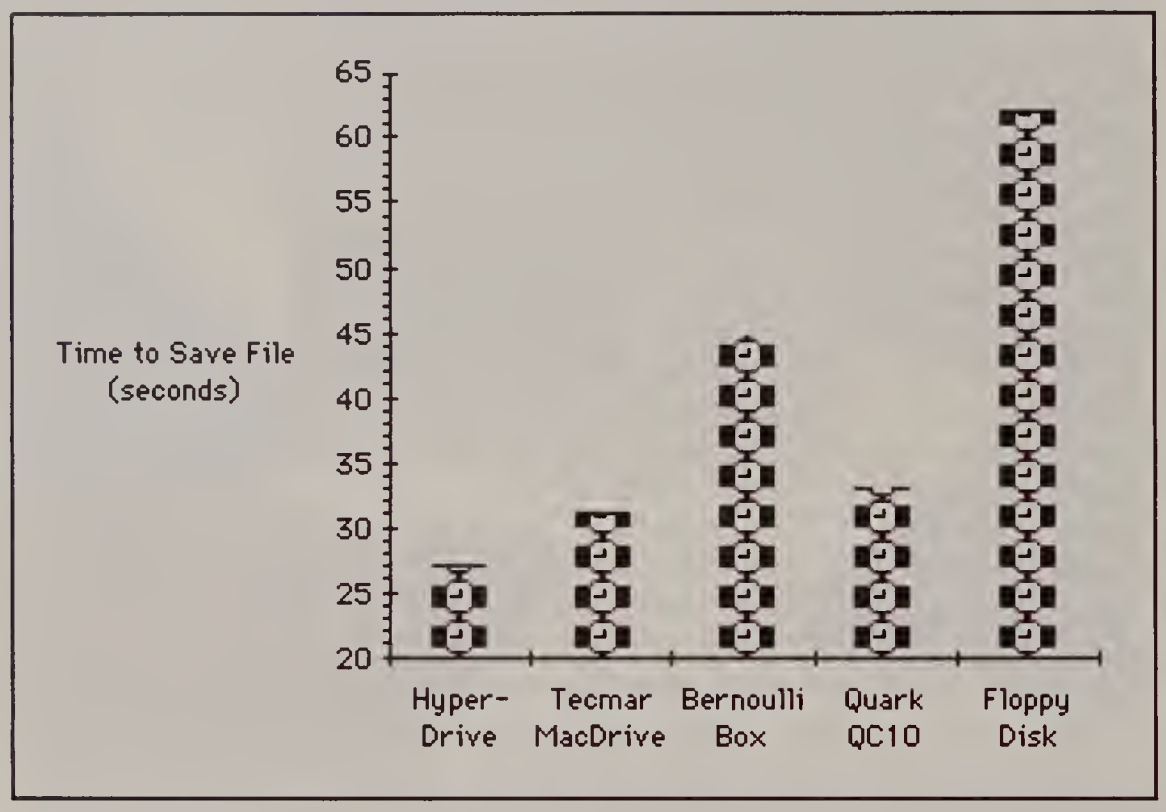
Tecmar engineers have developed a clever way of starting the Macintosh. Instead of requiring you to eject the startup floppy disk after the desktop appears, the system software ejects it automatically about halfway through the startup process, then turns control over to the MacDrive, which finishes the startup job at a much faster pace. This technique is an ideal compromise between starting directly from the hard disk and having to start from a floppy disk; in fact, I'd like to see this feature on all hard disks that require a startup floppy disk.

MacDrive

Tecmar updated the MacDrive to make it faster and more convenient. Now it is possible to divide the disk into volumes, and the new MacDrive software works with version 4.1 of the Finder. Another new feature is print spooling, which frees the computer while printing proceeds.

Version 2.1 of Tecmar's volume manager software corrects many of the limitations found in earlier versions of the software. Whereas previous versions forced you to put up with the tediously slow file system of version 1.1 of the Finder, Tecmar's new volume manager, version 2.1, lets you take advantage of the much faster file system in Finder 4.1.

Version 2.1 of Tecmar's volume manager also lets you select certain volumes to open automatically at startup, a feature missing from version 2.0 of the software. One problem with the volume manager is that it lets the volume name in the volume manager window differ from the name on the desktop, a condition that can be confusing.



On the Test Track
A comparison of the time required to save a 65K Microsoft Word *document with each of the four hard disks reviewed here and the Macintosh's floppy disk drive. Times were measured with the Finder 4.1.*

The MacDrive backup application program isn't as feature-laden as the HyperDrive's. The program can back up only individual files, not entire volumes, and no provision exists for copying only files modified since a certain date.

The MacDrive contains a 68000 microprocessor—the same chip that controls the Macintosh—and 16K of memory that are used for the drive's print spooler. Tecmar hopes to boost the drive's memory to 128K and to supply software to let the Macintosh take advantage of the drive's extra memory. For the present, however, the MacDrive's internal processing capabilities are being used at only a fraction of the drive's capacity.

The improved MacDrive is a good choice among Macintosh hard disks, thanks to the improved system software. With version 2.1 of the volume manager and version 4.1 of the Finder, the MacDrive's performance is second only to the HyperDrive.

Making the Hard Decision

Which hard disk is right for you? If portability and performance are important, consider the HyperDrive first. If you can live with the added bulk of an external disk drive, but you require an extra connector for a modem or another device, consider Quark's QC10 or Tecmar's MacDrive. Iomega's Bernoulli Box is a reliable performer but is hampered by relatively slow speed and inflexible volume management software.

Hard disks for the Macintosh have come a long way since the early days. Thanks to partitioning software, volume managers, and backup applications, you can organize applications and documents efficiently and make better use of a hard disk's storage space. And comedians can find their material somewhere else. □

Jim Heid is a Contributing Editor of Macworld.

QC10
Quark Peripherals, Inc.
2525 W. Evans #220
Denver, CO 80219-5554
303/934-2211
List price: 10-megabyte system $1295, 20-megabyte system $1795

HyperDrive
General Computer Co.
215 First St.
Cambridge, MA 02142
617/492-5500
List price: for 128K Macs $2795, including required 512K memory upgrade; for 512K Macs $2195

Bernoulli Box
Iomega Corp.
1821 West 4000 South
Roy, UT 84067
800/778-3000
List price: $1995; cartridges $59 each or three for $150

MacDrive
Tecmar, Inc.
6225 Cochran Rd.
Solon, OH 44139-3377
216/349-0600
List price: 5-megabyte removable cartridge system or 10-megabyte nonremovable cartridge system $1995, combination fixed and removable cartridge system $3290

Hard Disks at a Glance

	Hyper-Drive	MacDrive	Bernoulli Box	QC10
Hardware				
Mac connector used	none	printer	printer	disk
Spare connector provided	yes[1]	yes	yes	no
Start from hard disk	yes	no[2]	no	no
Capacity of unit tested (megabytes)	10	10	5	10
Subjective sound rating	quiet	medium	loud	medium
Software				
Maximum number of volumes[3]	32	20	5	63
Method of volume sizing	automatic	manual	fixed	manual
Volume passwords permitted	yes	no	no	yes
Automatic volume opening at startup	yes	no	yes	yes
Backup application provided	yes	yes	no	no
Disk test application provided	yes	no	no	no
Print spooling provided	no	yes	yes	no
Performance (times in seconds)[4]				
Startup (floppy: 20)[5]	11	18	27	23
Save document (floppy: 62)	27	31	45	33

Hard Disks at a Glance
A summary of the features and performance of the four hard disks. For the performance tests, floppy disk times are shown in parentheses. Startup times were measured from the startup beep to the appearance of the cursor on the desktop. The save-document test measured the time to save a 65K Microsoft Word *document.*

[1] Since the HyperDrive mounts internally, it does not occupy the Macintosh's modem, printer, or external disk drive ports, leaving them free for connection to other peripherals.

[2] Starting from the MacDrive is not permitted; however, the startup floppy disk automatically ejects and transfers control to the hard disk halfway through the startup process.

[3] This category refers to the maximum number of volumes supported by a product's volume manager, not the maximum number you can have open at once, which depends on whether you use a 128K or 512K Mac and on the amount of information in each open volume.

[4] Performance tests were run with Finder 4.1.

[5] Some hard disks' starting times are longer than a floppy disk's because of the extra time required for the Finder to read and display not only the hard disk but the startup floppy disk as well.

128K Mac Integration

Danny Goodman

Integrated programs such as *Jazz*, *Excel*, and *Crunch* have provided Macintosh owners with sophisticated tools to work with. The programs run best, however, on a 512K Mac with an external drive or a hard disk. For people who have 128K machines or modest budgets for software, Haba Systems' *Quartet* offers integration, and it runs in only 128K of memory.

Quartet is based on a spreadsheet in the manner of Lotus's *1-2-3*, with the entire program operating inside the confines of a column-and-row worksheet. *Quartet* gets its name from its four functions—spreadsheet, graphics, database, and text editing—but the spreadsheet and the graphics features are the ones I found particularly useful. The database is both limited and awkward. The text editing

Cocoon
Silverado
The Shooting Part
Back to the Futur
Rear Window
Repo Man
Lily in Love
St. Elmo's Fire
North by Northwe
Real Genius
Signal 7

2345
3355
3445
0999
2345
3355
3445
0999
2345

$16,775.00
$67,225.00
$54,995.00
$11,725.00
$16,775.00
$67,225.00
$54,995.00
$11,725.00

Move Pale Rider to Rialto, leave Goonies at Roxie.
Replace Casablanca with Mad Max Beyond Thunderdome.
Witness runs one more week at the Mercury.
Rear Window runs four more weeks at the Quartet, then moves to the

functions are convenient for enhancing spreadsheets and graphics on printouts, but the program does not provide actual word processing.

The Spreadsheet Maestro

As a spreadsheet, *Quartet* comes closest in powers and built-in functions to *Multiplan,* which also runs on a 128K Macintosh. *Quartet* lacks some *Multiplan* features such as linking of multiple worksheets, but it has a useful data table that makes "what-if" calculations easy. A data table lets you list the values you want to input to a given cell and define the cells for which you want to know the resulting values. Then the program automatically calculates and lists the values of the cells. A table might, for example, list loan payment amounts based on interest rates of from 10 to 13½ percent.

Entering cell formulas is easy because you don't have to type a preceding symbol, such as the *at* sign (@) required by some spreadsheets. You pay for this convenience, however, when it comes to typing column and row text labels in *Quartet*. The labels require a leading apostrophe, as do text entries for the database function. As with *Multiplan,* you can keep only one *Quartet* spreadsheet open at a time.

Generally, *Quartet* is stronger than *Multiplan* in financial functions and weaker in both trigonometric and text functions. The names of the built-in functions must be typed in because the program lacks a directory of functions that you can copy and paste into a spreadsheet. You can fill up a Note Pad sheet to simulate a directory. *Quartet*'s spreadsheet also has a Fill Data feature, which fills a row or a column with increasing or decreasing numbers after you set the starting number and increment. For example, if you're setting up a 60-month amortization table, you choose the range, select the Fill Data option, and specify the starting value and the increment. Within a couple seconds, the 60 cells are sequentially numbered. To move around a *Quartet* spreadsheet, you use the program's unique Diamond Control, which lets you move diagonally across a spreadsheet with one click. Still, for scrolling in intervals larger than a single screen, I would prefer that *Quartet* have vertical and horizontal scroll bars. The Go button, the box in the upper-left corner of the spreadsheet that contains black up and down arrows, is one of *Quartet*'s handiest features. You can set the program to display a particular part of the spreadsheet whenever you click the Go button. Clicking the Go button again brings you back to the original spot.

The Go button helps when you're entering data across more columns than fit in a screen. If you set up the Go button to flip between the left and right halves of the spreadsheet, you don't have to touch the Diamond Control to move from one side of the spreadsheet to the other. In addition, you can split the spreadsheet window either horizontally or vertically to view different parts of the spreadsheet simultaneously (see Figure 1). If you turn on the Sync Scroll option, both windows scroll, no matter which window you're working in.

The Graphics Connection

Quartet's graphing feature lets you create line, bar, and pie charts for any range of spreadsheet values (see Figure 2). You can plot up to four ranges in line and bar charts, but you don't have the sophistication of stacked-bar or combination bar and line charts. In the tradition of integrated programs like *Jazz, Excel,* and

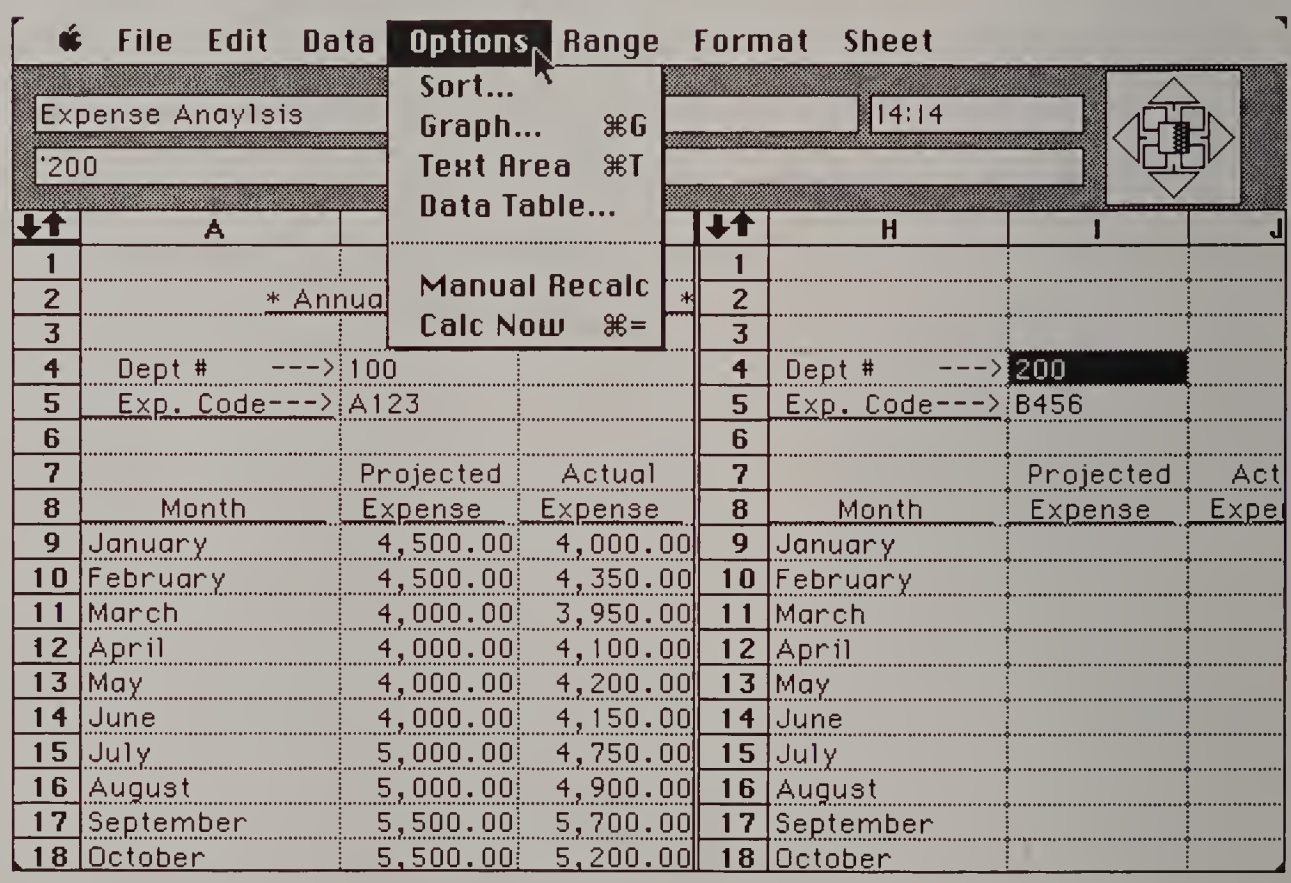


Figure 1

You can split Quartet*'s spreadsheet window either vertically or horizontally. The Diamond Control console in the upper-right corner controls scrolling.*

Crunch, graphs are linked dynamically to the spreadsheet so that when you alter data in a selected range, the graph changes instantly. If you set up the graph to share the screen with key parts of your "what-if" spreadsheet, you can see the results immediately.

The program automatically scales graphs when you resize them so that the image does not become distorted. You can also specify custom scaling; for example, if you want to compare two or more graphs, you can set the minimum, maximum, and increment values so the graphs are consistent. You add legends or other notations manually in text areas adjacent to graphs. To copy the graph into a *MacWrite* document for a report, you press ⌘-Shift-3 to make a *MacPaint* snapshot of the graph. You then import the graphic to *MacWrite* via the Clipboard. While *Quartet* lacks the graphics frills of a program like *Microsoft Chart,* the program's charts provide for quick visual analyses of spreadsheet data.

Database, Text, and More

You set up a database in *Quartet* through the cells of a worksheet. You cannot create a form for entering data. The only database management function available is record sorting. The program lets you sort on up to two key fields at a time. You can't select reporting features as you might expect from a program with a database function.

Text editing in *Quartet* is barely that. After designating a block of cells as a text area, you can type text with your choice of right, left, or full justification and with bold or underlined text. You're limited to 1000 characters per text area, and the system font is the only one available.

On a 128K Macintosh, *Quartet* functions decently, giving you between 1000 and 2000 spreadsheet cells, depending on the complexity of formulas and the relationships among cells. On a 512K Macintosh, the number of cells increases by a factor of ten. The *Quartet* disk comes with 130K—enough so you can get by without an external disk drive. Recalculation speed is average but acceptable for the simple spreadsheets you're likely to design with the program.

Haba Systems also produces 37 templates for *Quartet* on a disk that you purchase separately from the program. The templates range from loan amortization, job costing, and cash flow and break-even analyses to home budget and IRA planners.

Without question, you can get a lot more power in integrated software by stepping up to a program such as *Crunch* or *Excel.* But even with a few flaws, such as the lack of scroll bars to maneuver quickly around a large worksheet and the inability to close one worksheet without opening another, *Quartet* offers plenty of power for people whose primary applications involve numbers or graphics. And having all your data, including numbers, text, and graphics, in one program window rather than several can greatly simplify your computing. □

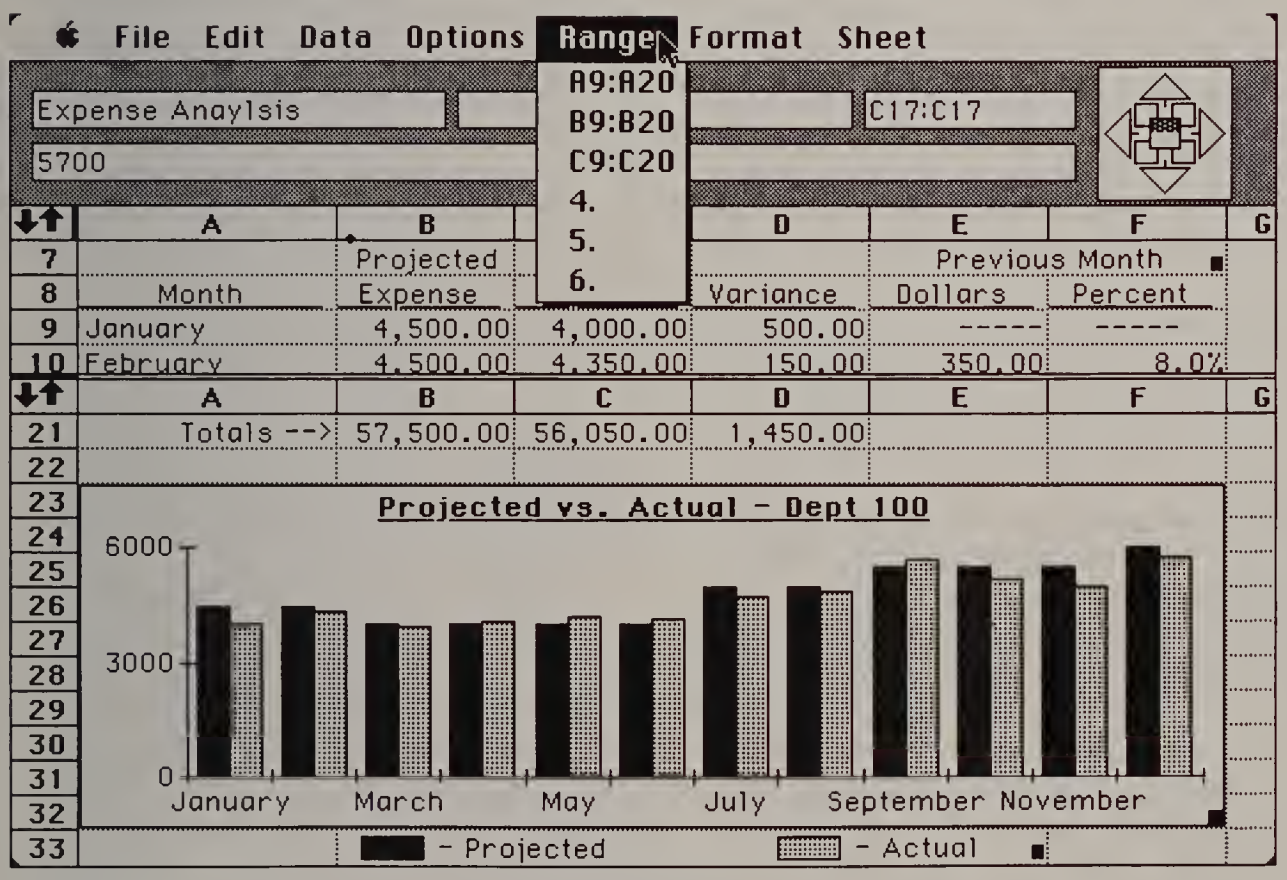


Figure 2

You preselect cell ranges to create a graph in Quartet. *In this example, three columns of the spreadsheet—A, B, and C—have been stored as ranges. Selecting a range from the Range menu automatically pastes the choice in the proper field in the Graph dialog box. If you change data in one of the ranges, the graph updates accordingly.*

Danny Goodman is a Contributing Editor of Macworld.

Quartet
Haba Systems
15154 Stagg St.
Van Nuys, CA 91405-1025
818/989-5822
List price: $199.95, templates $49

Do You Have an Appointment?

Nicholas Lavroff

Front Desk is a scheduling program for the Macintosh office that does more than manage your time

At first glance, dental and law practices may not appear to have much in common. Granted, dentists and lawyers solve different kinds of problems, but both have waiting rooms with outdated magazines and anxious clients.

Lawyers and dentists also share a propensity to schedule appointments well into the future. Of course, lawyers and dentists are not the only professionals who make long-term plans; architects, accountants, engineers, and, most certainly, obstetricians also depend on efficient time management.

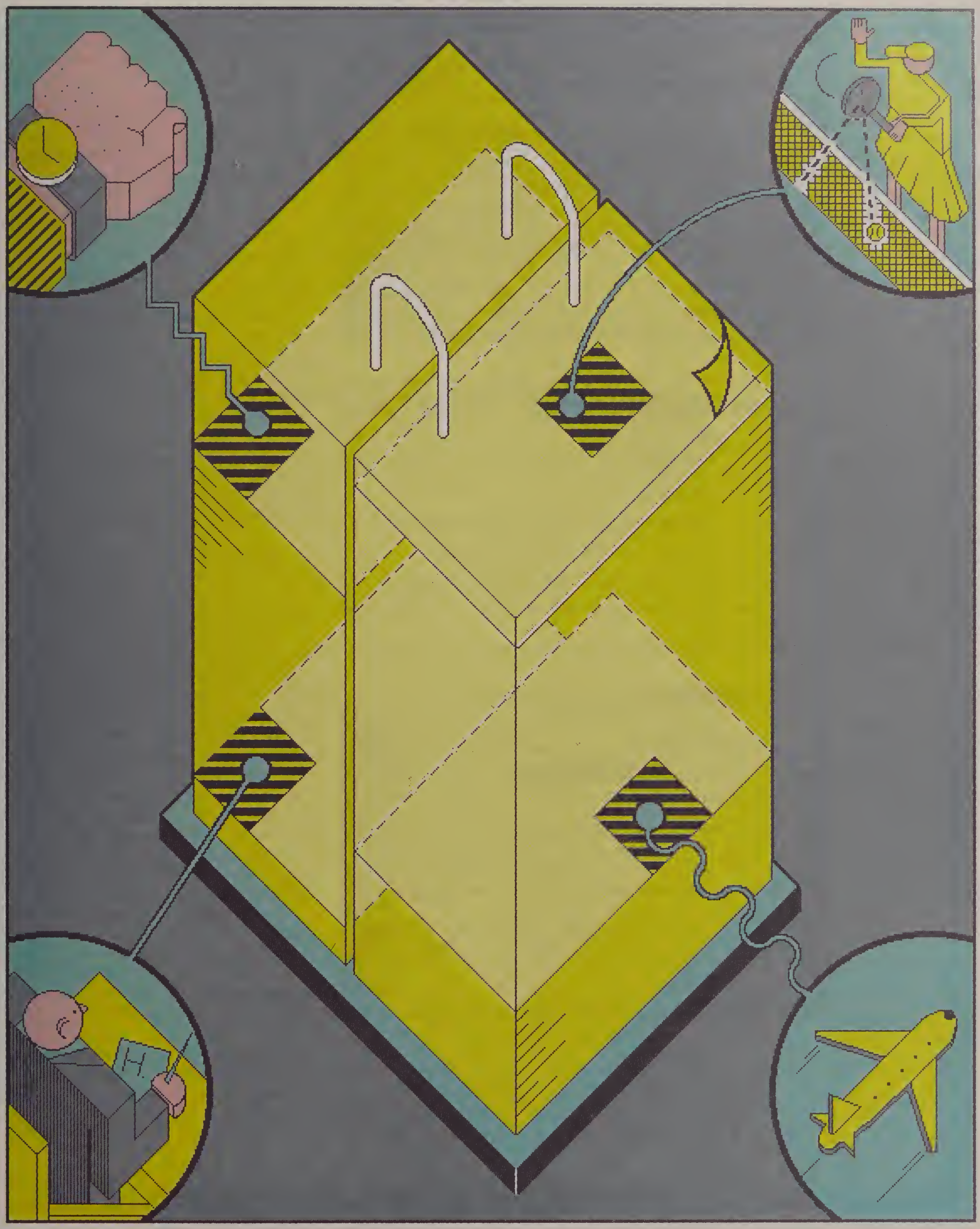
The problem with long-range scheduling is that the more distant the appointment, the more likely it is to be canceled. After a while an appointment book looks like a doodling pad, with entries scrawled in the margins because the time slots are filled with crossed-out appointments. Layered's *Front Desk,* an electronic appointment book, clears the calendar of scribbled entries and makes a welcome addition to the Macintosh office.

As its name implies, *Front Desk* is a tool for the person who customarily schedules appointments for office personnel. *Front Desk* can keep track of up to 15 resources (people, places, or pieces of equipment such as a printer or an X-ray machine) for a 12-month period. If your business has more than 15 resources, you can create additional files to accommodate your needs. Each resource, whether a conference room or a person, can be assigned an hourly rate, so that the information is neatly summarized and ready for billing. Although *Front Desk* does not produce the actual bills, it can print monthly summaries of each professional's billable activities. The program makes it easy for the office manager to see whether resources are operating efficiently. In addition, a new release of the program (distinguished from the original version by a gold label) allows you to transfer information as text files from *Front Desk* to other applications. You can, for example, cut and paste *Front Desk* reports into a spreadsheet program to perform in-depth revenue analyses. The program also works with the Switcher, so you can change applications in a split second.

Setting Up

Front Desk's primary screen is the Monthly Calendar (see Figure 1). Clicking one of the Week boxes on the left side of the calendar provides a picture of an entire week's appointments in one screen.

You customize the Monthly Calendar by specifying the services your business offers, the staff members and their hourly rates, and calendar particulars, such as hours of operation. For instance, to set up a time-management system for the law firm of Dewey, Cheetham & Howe, you start by stating the times the business day begins and ends, the days of the week the office is



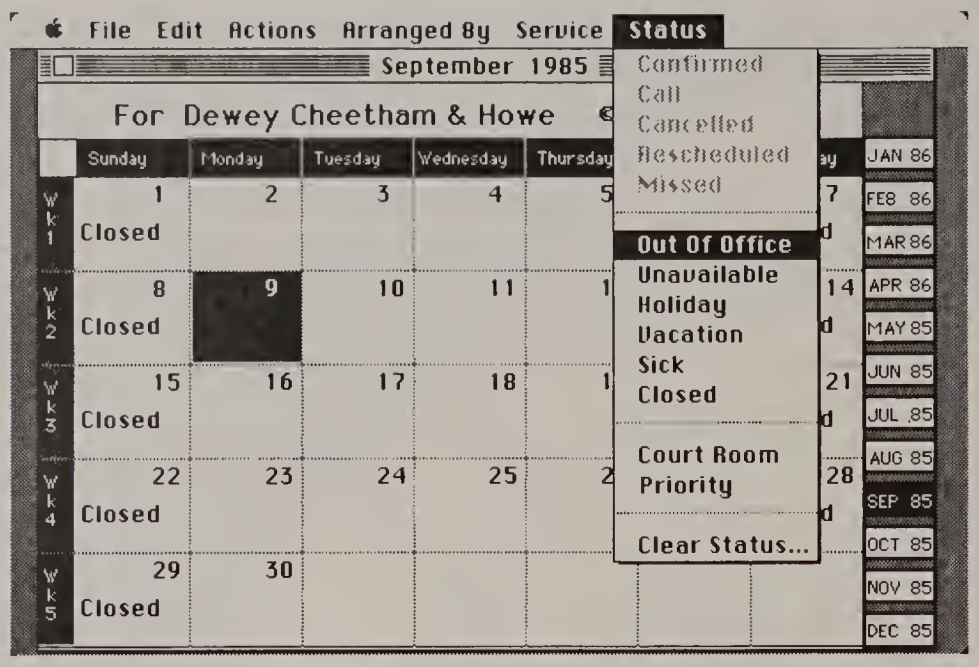


Figure 1
Front Desk's *Monthly Calendar displays information in several ways. Double-clicking on a particular day, week, or month from the calendar shows the appointments for that time period.*

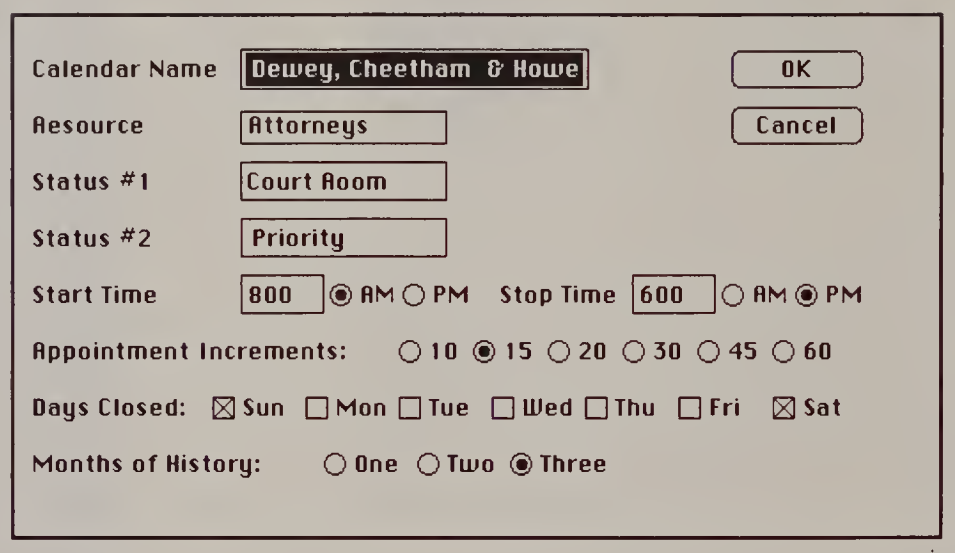


Figure 2
The Calendar Setup dialog box lets you customize Front Desk *to suit your needs. The two Status boxes allow users to add pertinent statuses that don't appear on the Status menu.*

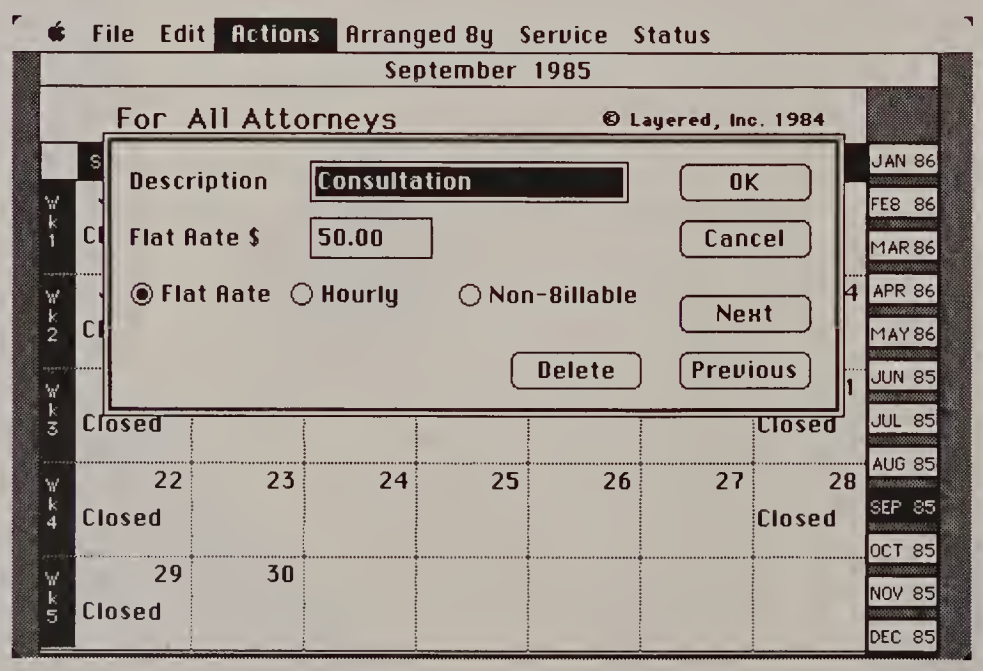


Figure 3
You create a menu of services in the Services Setup dialog box. Front Desk *automatically calculates the amount to bill for services, based on the billing rate and the scheduled length of the appointment.*

closed, appointment increments, and the number of past months you're working with (see Figure 2). *Front Desk* gives you 11 predefined statuses: five appointment statuses include Confirmed, Call, Cancelled, Rescheduled, and Missed, and six day statuses include Out of Office, Unavailable, Holiday, Vacation, Sick, and Closed. In addition, you can define two statuses, such as Lunch or Golf.

Each resource has a card specifying name, resource label, and hourly rate. For the law firm, for example, you would fill out a resource card for each of the three attorneys and one for the conference room.

You can also specify the kind of services offered during appointments. *Front Desk* lists up to 15 services, such as legal or medical services. In the Services Setup dialog box, you specify whether a service is billable and, if so, whether to bill at a flat rate or an hourly rate (see Figure 3). *Front Desk* automatically calculates the amount to bill for services by the hour based on the billing rate and the length of the appointment.

Front Desk in Action

Front Desk lets you maintain a separate appointment schedule for each resource. After you select a resource from the Arranged By menu, you select the relevant day, week, or month. For example, if you need to schedule an appointment for the current month, double-click the appropriate day, double-click the desired time slot, and then fill out the Appointment Entry card that appears (see Figure 4).

Front Desk also allows you to display every instance of a particular weekday for the entire month. To schedule a client available only on Thursday mornings, for example, display every Thursday in the current month. You can also coordinate the schedules of all resources. Suppose that the three attorneys want to meet with an important new client in the conference room. The client is available only after 3 p.m. on Wednesdays, and everyone involved wants to schedule the meeting for the earliest possible time slot. The situation poses no problem for *Front Desk:* you select All Attorneys from the Arranged By menu and select Wednesdays by clicking the Wednesday box at the top of the

Monthly Calendar. The program displays a screen showing the Wednesday appointments for all four resources—the three lawyers and the meeting room—making it easy to find the earliest available time slot.

Front Desk is also capable of searching for appointments. If attorney Dewey wants to know when Mr. Vespucci is scheduled to meet him, for example, *Front Desk* finds all of that client's appointments with Dewey. If you choose the All Resource option, the program searches for every attorney's appointments with that particular client. *Front Desk* displays the results of the search in the Appointment Search window and lets you print the information.

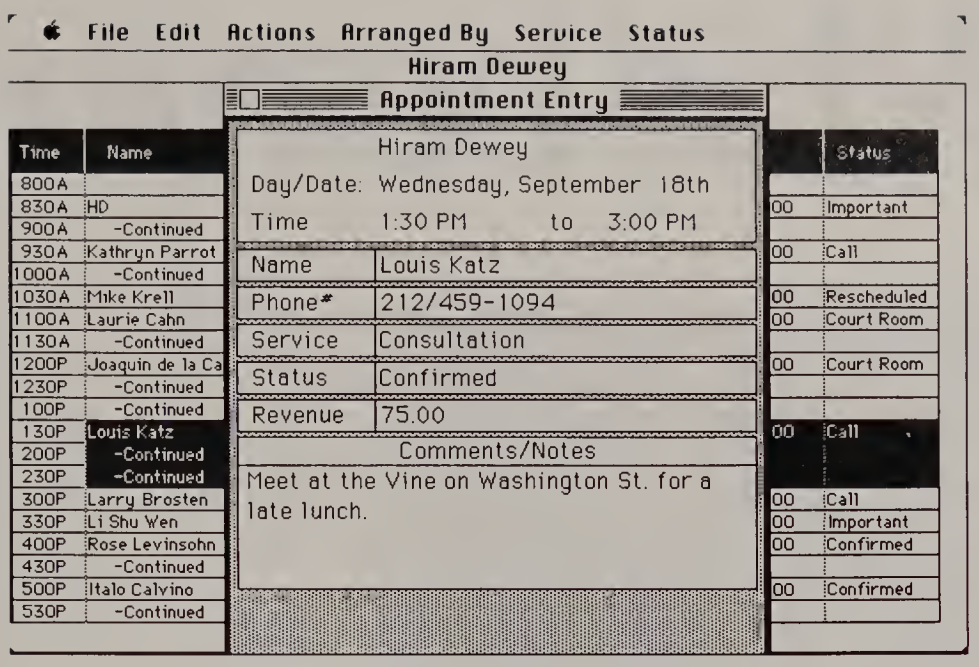


Figure 4
When you double-click on a time slot, an Appointment Entry card is displayed. You use the commands in the Service and Status menus to fill in the appropriate blanks on the card.

Printing Reports

You can preview and print *Front Desk* reports or the contents of the screen on either the Imagewriter or the LaserWriter. The program produces two kinds of reports: Appointment Confirmation and Appointment Analysis. The Appointment Confirmation report lists all the appointments for a selected day, week, or month and includes all the information entered on the Appointment Entry card. The report lists all the appointments for a single selected resource or for all resources.

The Appointment Analysis report consists of two reports: Revenue and Work Hours. The Revenue report provides an analysis of business revenues for a selected day, week, or month, for a selected resource or for all resources (see Figure 5). Revenue is reported by both service and resource, and the report includes information such as the total revenue generated by each service, the average revenue per hour generated by each service, the total revenue contributed by each resource, and the average revenue per hour generated by each resource. The Work Hours report analyzes the number of hours each resource spent on each activity for the selected day, week, or month. It gives the total number of hours and the percent of total time spent on each service as well as the total number of hours and the percent of total time contributed by each resource.

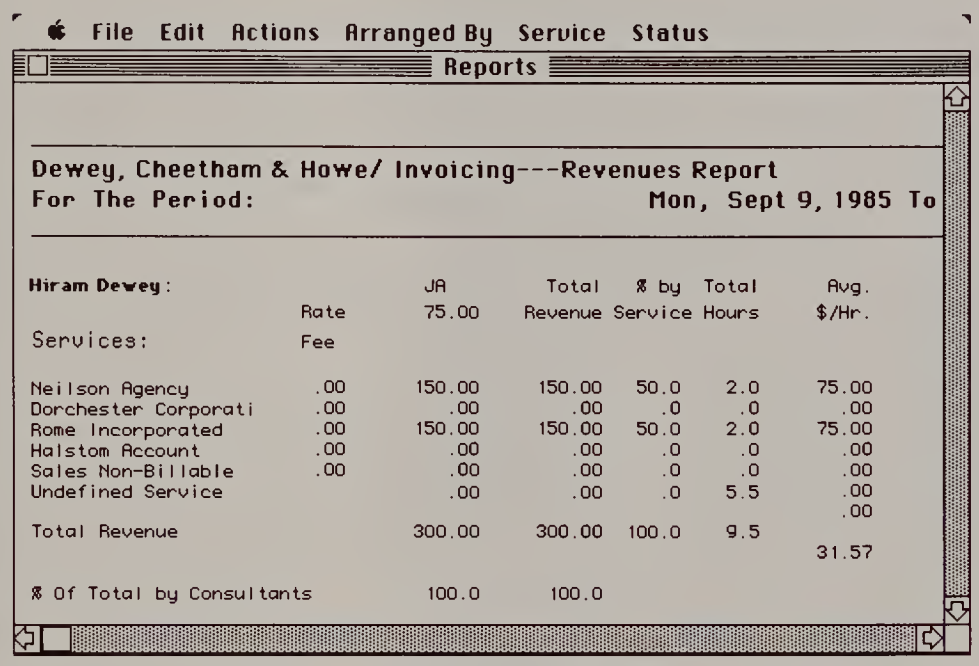


Figure 5
Front Desk *allows you to display two types of reports—Appointment Confirmation and Appointment Analysis—on the screen or print them out. The Appointment Analysis Revenue report, for example, analyzes financial information for a specified period.*

Overall, *Front Desk* is a cleverly designed application that does what a computer program should do—make your work easier and more productive. If time and resource management is important to your business, *Front Desk* will help you get the most out of your month. □

◢◢◢◢◢◢◢◢◢◢◢ *Nicholas Lavroff is a Contributing Editor of* Macworld.

◢◢◢◢◢◢◢◢◢◢◢

Front Desk
Layered, Inc.
85 Merrimac St.
Boston, MA 02114
617/423-9041
List price: $149.95

Creative Uses

As a time and resource management system, *Front Desk* is flexible enough to handle a variety of scheduling tasks. The program's authors include a booklet filled with imaginative applications, from making sales projections to allocating resources in a school system, as an inspiration for creative uses of the program.

Mac be nimble.

Apples. 10¢

Macworld readers tend to talk a lot about apples. But how many have ever really tasted one? I mean right off the tree. Picked with your very own hands. It's apple picking time right now up here in New Hampshire, and appropriately enough, Macintosh apples are the most popular early variety. You can buy one at a local farmstand for just a dime.

It's amazing how many things you can do with a Macintosh apple. Apple pie, apple juice, apple cider, apple sauce, apple crisp, apple jelly, apple butter. And it's even more amazing how many things you can do with a Macintosh computer. Write a book, design some stationery, run a business, analyze data, play music, play games.

Now, a lot of people think they need some personal advice before they buy products for their Mac. So, they call us. Because when we're not out picking apples, we're inside picking add-ons and software to go with them. In both cases, it's a question of taste, timing, knowing what's available, and how to get it at the best price.

SOFTWARE

Altsys
Fontastic *(create your own fonts)* ..... $37.
Ann Arbor Softworks
Animation Toolkit 1 ..... 32.
Create, edit, and animate pictures.
Apropos
You must have Multiplan to use.
Financial Planning ..... 62.
Investment Planning ..... 62.
Arrays/Continental
Home Accountant ..... 82.
External drive recommended.
Assimilation
Mac·Tracks ..... 21.
Mac·Memory·Disk ..... 21.
Mac·Spell·Right ..... 59.
Requires version 3.3 or later of MacWrite.
ATI
Teach Yourself Multiplan ..... 32.
MacCoach Training ..... 45.
Axlon
Art Portfolio ..... 36.
Card Shoppe ..... 36.
Blyth Software
Omnis 2 *(requires external drive)* ..... 139.
Omnis 3 *(requires 512k)* ..... 349.
Brainpower
Statview *(statistics package)* ..... 119.
Casady Company
Fluent Fonts *(two-disk set)* ..... $35.
Central Point Software
Copy II Mac - *Version 4* ..... 23.
Computer Software Design
MacLion *(relational database)* ..... 219.
External drive recommended.
Creative Solutions
MacForth - Level 1 ..... 89.
MacForth - Level 2 ..... 139.
Level 2 includes an assembler, floating point, and advanced graphics.
DataFood
MacForms ..... 46.
Over 100 business forms on four disks.
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1st Port *(communications software)* ..... 55.
1st Merge ..... 55.
Data-entry and mail-merge, labels.
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Full featured accounting program.
Dow Jones
Straight Talk ..... 49.
Spreadsheet Link ..... 61.
Must have Multiplan, modem and Dow Jones Straight Talk.
Market Manager PLUS ..... 119.
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Create abbreviations for MacWrite or Word phrases.
Quickset ..... 65.
Icon-driven true accessory with powerful calculations.
1st Byte
Smoothtalker *(version 2.0)* ..... 59.
Voice synthesis software for the Mac.
Forethought
Typing Intrigue ..... 31.
Factfinder ..... 89.
FileMaker ..... 125.
Great Wave Software
ConcertWare+ ..... 49.
Compose and listen to your own songs.
Harvard Associates
MacManager *(business simulation)* ..... 32.
Desktoppers *(new desk accessories)* ..... 32.
Hayden Software
DaVinci Buildings ..... 31.
DaVinci Interiors ..... 31.
DaVinci Landscapes ..... 31.
DaVinci Building Blocks ..... 46.
DaVinci Commercial Interiors ..... 118.
Art Grabber with Body Shop ..... 33.
Turbo Turtle ..... 37.
I Know It's Here Somewhere ..... 39.
Musicworks ..... 46.
Hayden:Speller ..... 47.
For MacWrite 4.5 and Microsoft Word.
Score Improvement System for the SAT $59.
College entrance-exam study guide.
Videoworks 59
Ensemble ..... 169.
Database, calculations, graphics and more.
Hayes
Smartcom II *(communications software)* 89.
Hippopotamus Software
Hippo-Lock *(file security program)* ..... 84.
Hippo-C - Level 1 ..... 109.
Hippo-C - Level 2 ..... 289.
Upgrade Hippo-C Level 1 to Level 2 ..... 195.
Human Edge Software
Mind Prober ..... 29.
The Communication Edge ..... 99.
The Management Edge ..... 129.
The Sales Edge ..... 129.
The Negotiation Edge ..... 149.
Ideaform
MacLabeler *(print disk labels)* ..... 32.
Kensington
Graphic Accents ..... 33.
Professional Type Fonts for Text ..... 33.
Professional Type Fonts for Headlines ..... 45.
Requires 512k.
Linguist's Software
Tech *(1000 different symbols)* ..... 75.
MacGreek+ ..... 75.
MacHebrew ..... 75.
MacKana/Basic Kanji ..... 75.
MacKorean ..... 75.
MacGreek/Hebrew/Phonetics ..... 129.
Living Videotext
ThinkTank 128k ..... 77.
ThinkTank 512k ..... 129.
Magnum
McPic - Volume I ..... 31.
McPic - Volume II ..... 31.
The Slide Show Magician ..... 38.
Manhattan Graphics
Ready Set Go *(requires 512k)* ..... 85.
Mark of the Unicorn
Professional Composer *(requires 512k)* 289.
Microsoft
Entrepreneur ..... 32.
Learning Multiplan and Chart ..... 42.
Chart ..... 75.
Logo ..... 79.
Basic *(version 2.0)* ..... 92.
Multiplan ..... 107.
File ..... 117.
Word ..... 117.
Business Pack ..... 357.
Includes Word, File, Chart, and Multiplan.
Miles Computing
Mac the Knife - Volume 1 25
Mac the Knife - Volume 2 ..... 29.
Monogram
Forecast ..... 45.
Dollars & Sense ..... 82.
Odesta
Helix ..... 239.
Requires 512k and external drive.
Paladin
Crunch *(requires 512k)* ..... 189.

Mac one, purl two.

AT LAST, A REAL LIVE SOFTWARE PROGRAMMER.

June Boger is actually not strange. In a contest that has featured Mac users who are arctic explorers, heavy metal guitarists, and cougar tamers, June may seem a little out of place. But she is, as our original contest "rules" requested, "an otherwise-normal-looking person with a taste for the...plain old different."

Really, now. How many people would go to the trouble of developing a Multiplan program for their home knitting? Surely, she deserves something. There she was, one of the earliest Mac owners (April 1984), sitting around with no available software but MacPaint, MacWrite, and Multiplan. She had designed her stationery, she had written her letters, she had set up her household finances.

Suddenly, she spots her knitting machine and, after a few hours with Multiplan, she can enter measurements, size of yarn, and stitches/rows per inch and get a complete set of knitting instructions for any size of a particular pattern! "Cast on 176 stitches. Rib for desired length, then knit to row 186. etc. etc."

AT LAST, A REAL LIVE KNIT WIT.

Okay, so June's got her knitting instructions. Now, she's thinking how great it would be to get a program that translates them onto the punch cards that come with the knitting machine. Or, even better, if she could use her ThunderScan Digitizer to capture the *image* of a sweater that she likes. And then turn *that* into a MacPaint document which could be edited to size and personal taste. And then use the *whole thing* to create a program to tell her which holes to punch in the cards! The knitting machine could make the whole sweater in an hour or two!

Do we have that right, June? Come to think of it, maybe you are a little strange. Welcome to the club.

June Boger's Mac helps her make the leap from sheep to knits.

My Connection.
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Mac be quick. MacCo

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MathFlash *(math flash card drills)*..... 31.
Accounts Receivable..... 89.
General Ledger..... 89.
Inventory Control..... 89.
Peachtree
Back to Basics General Ledger ..... 89.
Accounts Payable..... 89.
Accounts Receivable..... 89.
ProVUE Development
OverVUE *(version 2.0)*..... 159.
RealData, Inc.
Real estate and financial analysis templates. You must have Multiplan or Jazz to use.
Financial Analysis..... 69.
Commercial/Industrial Applications..... 69.
Residential Real Estate ..... 69.
Real Estate Investment Analysis ..... 95.
On Schedule ..... 130.
Tax Shelter Syndication Analysis..... 195.
Reston Publishing
Construction Estimator..... 49.
You must have Multiplan to use.
Scarborough Systems
Mastertype..... 29.
Sierra On-Line
MacOneWrite *(cash disbursements)* .. 179.
Silicon Beach Software
Accessory Pak 1..... 24.
Simon & Schuster
The Mac Art Department..... 26.
Paper Airplane Construction Kit..... 27.
Typing Tutor III ..... 31.
Software Publishing
PFS:File/Report ..... 110.
State of the Art
Electric Checkbook ..... 49.
T/Maker
Click Art Personal Graphics..... 30.
Click Art Publications..... 30.
Click Art Letters..... 30.
Click Art Effects..... 30.
ClickOn Worksheet..... 47.
Telos Software
Filevision..... 99.
Think Educational
Mind Over Mac..... 31.
Five challenging games.
MacEdge II ..... 31.
Learning programs in math and reading.
Videx
MacCalendar..... 53.
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Warner Software
The Desk Organizer..... 65.

GAMES

Aegis Development
MacChallenger ..... $29.
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Axlon
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Match the squares and solve the hidden puzzles underneath.
Blue Chip
Millionaire *(stock market)* ..... 37.
Tycoon *(commodities)*..... 37.
Baron *(real estate)* ..... 37.
BrainPower
Think Fast..... 24.
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Chipwits ..... 29.
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Lode Runner *(you'll never sleep!)*..... 26.
Cyborg *(sci-fi text adventure)*..... 26.

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Sargon III ..... 31.
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Enchanter *(standard)*..... 25.
the Witness *(standard)*..... 25.
Planetfall *(standard)*..... 25.
Cutthroats *(standard)*..... 25.
Hitchhiker's Guide *(standard)* ..... 25.
Wishbringer *(standard)* ..... 25.
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Zork III *(advanced)*..... 29.
Infidel *(advanced)*..... 29.
Suspect *(advanced)*..... 29.
Sorcerer *(advanced)* ..... 29.
Deadline *(expert)* ..... 31.
Starcross *(expert)*..... 31.
Suspended *(expert)*..... 31.
Invisiclues (hint booklets) are available for any Infocom games. Specify game. ..... 7.
Mark of the Unicorn
Mouse Stampede *(highly addictive)*.... 23.
Miles Computing
MacAttack *(3-D tank simulation)* ..... 29.
Mirage Concepts
Trivia *(new low price)*..... 19.
Origin Systems
Exodus: Ultima III ..... 49.
Superior fantasy adventure.
Penguin
Transylvania..... 24.
The Quest..... 24.
Pensate..... 24.
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Pryority Software
Forbidden Quest..... 27.
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nection does the trick.

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MacCheckers/Reversi . . . . . 29.
MacGammon/Cribbage . . . . . 29.
MacVegas . . . . . 35.

HARDWARE

Assimilation
Mac·Epson·Connection . . . . . 69.
Mac·Daisywheel·Connection . . . . . 75.
Mac·Turbo·Touch . . . . . 89.
Compucable
Mac to Hayes Smartmodem cable . . . . . 17.
Mac to Epson FX/RX/JX printer cable . . 17.
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Datasaver AC Power Backup . . . . . call
Keeps Mac operating during line power interruptions or brownouts. 90 watts.
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Emerald *(6 outlets; 6 ft cord)* . . . . . 39.
Sapphire *(3 outlets; EMI/RFI filtered)* . . . 52.
Ruby *(6 outlets; EMI/RFI filtered; 6 ft cord)* 59.
Epson
FX-85 . . . . . call
FX-185 . . . . . call
JX-80 . . . . . call
LX-80 . . . . . call
LQ-1500 *(letter quality dot matrix)* . . . . call
Hayes Microcomputing
Smartmodem 300 . . . . . call
Smartmodem 1200 . . . . . call
Smartcom II *(communications software)* 89.
Compucable's Mac to Smartmodem cable 17.
IOMEGA
Bernoulli Box *(5-megabyte storage)* . . 1349.
5-meg Cartridge . . . . . 39.
Head Cleaning Kit . . . . . 69.
Kensington
External Disk Drive Cover . . . . . 8.
Mouse Pocket 8
Mac Dust Cover 10
Mac XL Dust Cover 10
Imagewriter Dust Cover 10
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Universal Printer Stand . . . . . $17.
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Polarizing Filter . . . . . 34.
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Koala Technologies
MacVision . . . . . 179.
Digitize pictures or objects for reports, projects or just plain fun.
Microcom
MacModem *(Hayes compatible)* . . . . . 469.
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Microsoft
MacEnhancer . . . . . 165.
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Superex Business Software
MacSpeak *(external speaker)* . . . . . 15.
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MacGard . . . . . 59.
Surge and static protection, provides two outlets.

DISKS

Innovative Concepts
Flip & File *(Holds 40 disks)* . . . . . 21.
Pacific Wave
Flip Sort Micro *(Holds 40 disks)* . . . . . 12.
Flip Sort Micro *(Holds 60 disks)* . . . . . 15.
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Verbatim 3½" Disks *(Box of 10)* . . . . . 28.
Sony 3½" Disks *(Box of 10)* . . . . . 28.
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Memorex 3½" Disks *(Box of 10)* . . . . . 30.
MAXELL 3½" Disks *(Box of 10)* . . . . . 30.
3M 3½" Disks *(Box of 10)* . . . . . 30.

INFORMATION SERVICES

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Compuserve Information Service . . . . . 19.
Includes subscription, manual, 5 hours of connect time, and monthly publications.
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MISCELLANEOUS

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Floppiclene *(ten cleaning disks)* $25.
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Teakwood Roll-top Case *(holds 90 disks)* 27.
Microsoft Press
Microsoft Multiplan: Of Mice and Menus 12.
Inside MacPaint . . . . . 14.
MacWork MacPlay . . . . . 14.
The Apple Macintosh Book . . . . . 14.
Presentation Graphics on Apple Mac . . 14.
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Imagewriter Ribbon . . . . . 5.
Imagewriter Ribbons Six Pack 27
Imagewriter Rainbow Six Pack 27
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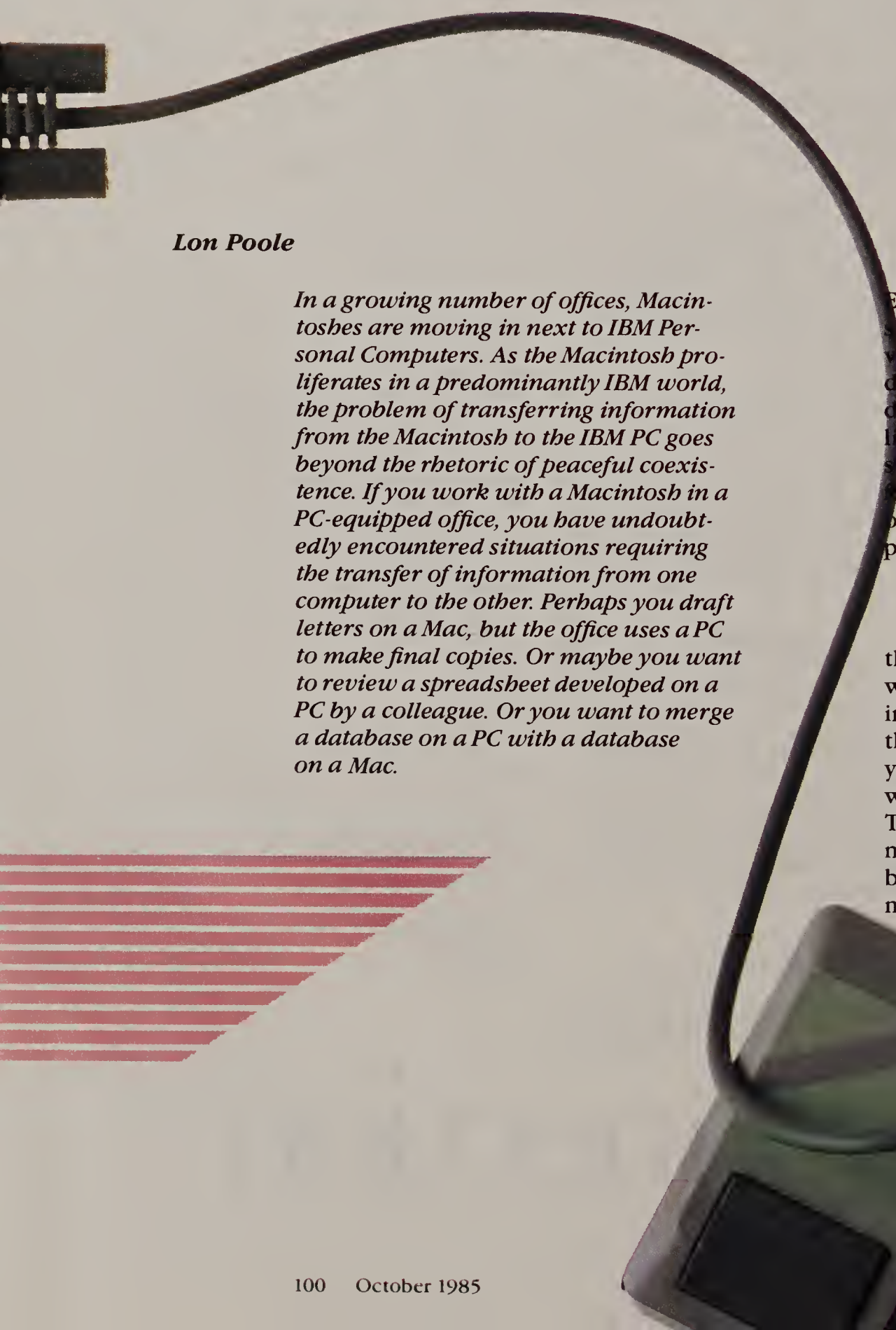
The PC-Mac Transfer



Lon Poole

In a growing number of offices, Macintoshes are moving in next to IBM Personal Computers. As the Macintosh proliferates in a predominantly IBM world, the problem of transferring information from the Macintosh to the IBM PC goes beyond the rhetoric of peaceful coexistence. If you work with a Macintosh in a PC-equipped office, you have undoubtedly encountered situations requiring the transfer of information from one computer to the other. Perhaps you draft letters on a Mac, but the office uses a PC to make final copies. Or maybe you want to review a spreadsheet developed on a PC by a colleague. Or you want to merge a database on a PC with a database on a Mac.

Exchanging information would be easy if you could simply put a Macintosh disk in an IBM PC or vice versa. But not only do the two computers use disks of different sizes, they also record information on the disks in different ways. However, you can open the lines of communication so that the Mac and the PC share more than just table space. The key is to transfer a document—or file, as it's called on the PC—from one computer to another via each machine's serial port.

Making the Connection

You begin by connecting the two computers. If the machines are close enough, you connect them with a cable. One end of the cable plugs into the Macintosh's modem port, and the other end plugs into the PC's COM1 or COM2 serial port. In most cases you must use a cable called a *null modem cable,* which swaps the incoming and outgoing data lines. The cable used for the Imagewriter happens to be a null modem cable, so if the two computers are side by side, you can use the Imagewriter cable to connect them.

If the two computers are too far apart for direct hookup, you can link them over the telephone lines. To do this you need a modem for each computer. The modem at the sending computer converts the digital information stored in the computer into sound patterns that can travel over the phone lines. The modem at the receiving computer converts the sound patterns back to digital information that the computer can store.

You plug a modem into the Mac's modem port using a regular modem cable, not a null modem cable. The modem for the IBM PC may be a circuit board that fits into one of the slots inside the computer, or it may be a separate unit. You plug an external modem into the PC's COM1 or COM2 serial port using a modem cable with 25-pin connectors at both ends.

You must also connect each modem to a telephone line. Most newer modems connect directly to the phone line using a standard modular phone plug. A direct-connect modem such as the Hayes Smartmodem 1200 "picks up" the phone, dials a number, and initiates communications with the modem at the other end.

Communications Software

You can't send documents directly from a word processing program like *MacWrite* to a foreign word processing program like *MultiMate* on the PC. Instead, you must run a communications program on each machine. Then you can exchange information via the serial ports, with or without modems.

The most common type of communications program is the terminal program, which lets you communicate with information services such as CompuServe. On the Macintosh, terminal programs include *MacTerminal, Smartcom II, Telescape,* and even the MockTerminal desk accessory. On the IBM PC the terminal program may be *PC-Talk III, Crosstalk, Smartcom II,* or any of dozens of others. If you use a modem, the terminal program must be compatible with the modem so the program can instruct the modem to dial a number, establish communications, answer incoming calls, and so forth. Most modern modems and terminal programs are *Hayes compatible,* which means they use the same commands as the Hayes Smartmodem.

Another type of communications program is designed specifically for transferring documents between the Macintosh and another personal computer, such as the IBM PC. Two such programs, *MacLink* and *PC to Mac and Back,* consist of parallel programs, one for the Mac and the other for the PC. Communications programs like these simplify the file transfer process and provide extra features. For example, *MacLink* allows you to control the entire file transfer, in either direction, from the Macintosh (see Figure 1).

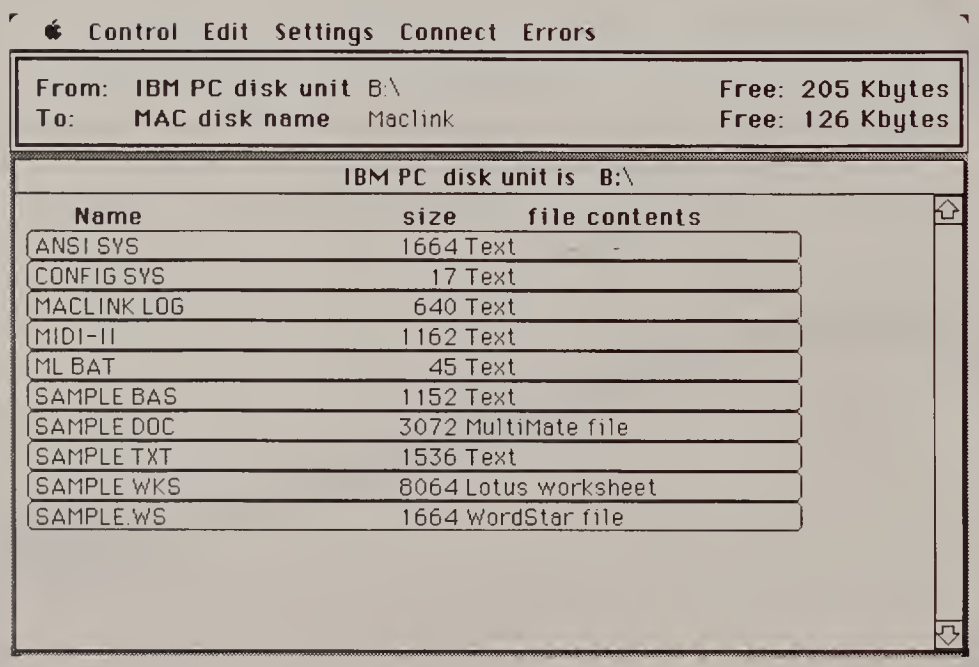


Figure 1

Before you transfer files from the IBM PC to the Macintosh, MacLink *displays the PC's directory on the Mac's screen.*

The Communications Settings

To successfully exchange information, you must match the communications settings on the Macintosh to those of the PC. Almost all terminal programs let you change the communications settings using either menus or typed commands. *MacLink* and *PC to Mac and Back* come with most of the communications settings already set.

The most important communications setting is the speed at which information travels between the two computers. Called the *baud rate,* it ranges from a low of 110 bits per second (bps) to a high of 19,200 bps, or from about 11 to 1920 characters per second. Both the Macintosh and the PC must be set at the same baud rate. You also need to turn on the local echo feature–sometimes called half-duplex–so you can see what you type. The meaning of the other communications settings–number of data bits, also called word length; parity; start bits; and stop bits–is not important, as long as the settings match on both computers.

Establishing Communication

After starting the communications programs on both computers and selecting the proper communications settings, you are ready to establish communication between the Macintosh and the PC. If the two computers are connected by direct cable, without modems, anything you type on one computer should appear on both computer screens.

If the two computers are connected by modems over the phone lines, one computer must call the other before communication can begin. Communications programs usually have menu choices for dialing a phone number. If not, you can usually type a command that makes the modem dial a number. For example, typing ATD5551212 would instruct a Hayes Smartmodem, Apple Modem, or other compatible modem to dial the number 555-1212.

Most communications programs automatically answer an incoming call and establish communication with the calling computer. If yours does not, you can type a command that instructs the modem to answer the phone and establish communication. The command ATA works with Hayes, Apple, and equivalent modems.

If the Macintosh and the PC are connected and no characters appear on either computer screen when you type, try changing the cable. If you're using a null modem cable–an Imagewriter cable, for example–you probably need a standard modem cable. If you've tried both types of cable without luck, recheck the communications settings; they must match exactly.

The Transfer Method

Most communications programs can send or receive a document either without checking for errors or with some form of error checking. How each verification method works is unimportant. What is important is that both communications programs use the same transfer method.

The simplest way to transfer a file—called text mode, file capture, or ASCII mode—involves no error checking at all. Text-mode file transfers usually work well when the two computers are directly cabled.

When the Macintosh and the PC are connected via modems over the phone lines, static and random electrical noise may corrupt a document unless error checking is used. The Xmodem protocol, also called the Christiansen protocol after its developer, Ward Christiansen, is probably the most common form of error checking in personal computer communications. Some communications programs offer other error-checking protocols. *MacLink* and *PC to Mac and Back,* for example, each has a unique protocol designed to improve error checking. Using an error-checking protocol usually slows down file conversion, but it is required to ensure accurate transfer.

Receiving a Document

When you use the Xmodem protocol, it doesn't matter whether one computer starts sending before the other starts receiving, or vice versa. Both computers must wait for "ready" signals from each other before the transfer can begin. When you use text mode, however, one computer must be ready to receive before the other starts sending, or the first part of the transmission gets lost.

Many communications programs, such as *MacTerminal,* avoid losing information in text mode by automatically recording incoming data in a special area on the disk called a *capture buffer.* With *MacTerminal* you can save the capture buffer on the disk by choosing the Save command. Most IBM PC communications programs also have a command that lets you save the capture buffer to a disk file. If you are using an error-checking protocol with *MacTerminal,* the Receive command in the File menu lets you specify the file name and the disk where the incoming information will be stored.

Sending a Document

To send a document with *MacTerminal,* you choose Send from the File menu and then select a document name from a list of files in a MiniFinder dialog box. From the PC, you type the communications program's send command and then type the name of the file to send.

If you use the text mode, the text of the document scrolls on both computer screens during transmission. If you use the Xmodem protocol with *MacTerminal,* you see a scale indicating how much of the file has been transferred.

When you finish transferring files between two computers connected by direct cable, you quit the communications programs. If the computers are connected over the phone lines, you select the "hang up" command from a menu or type a command to tell the modem to hang up the phone. With a Hayes, Apple, or equivalent modem, you wait a second and type three plus signs in a row (+++). When "OK" appears on the screen, you type ATH, and the modem hangs up. If all else fails, you can turn off the modems. After hanging up or turning off the modems, you quit the communications programs.

Using Transferred Documents

To open a document you have transferred to the Macintosh, you start the application program with which you plan to use the transferred document. Then you can open or load the transferred document.

While it's usually possible to open a document on the Mac by double-clicking on the document icon, the procedure probably won't work with a transferred document. Chances are that you will have to open the application first. From within the application, you choose Open from the File menu and double-click on the document name.

When you open a transferred document with *MacWrite,* a dialog box asks whether to treat each carriage return character in the document as the end of a line or the end of a paragraph. More often than not, the correct response is "paragraph." This choice tells *MacWrite* that the document being opened uses carriage return characters to mark the ends of paragraphs. Choose the "line break" option only when you are opening a document that has a carriage return character at the end of every line. Choosing "line break" tells *MacWrite* to weed out single carriage return characters and to start a new paragraph only when it finds two carriage return characters in a row. Figure 2 shows the positions of the normally invisible carriage return characters in two types of documents.

Although *MacWrite* was designed as a word processor, it can also edit a spreadsheet or a database created on the PC. If you transfer a spreadsheet or database file to the Macintosh and want to open it with

MacWrite, choose the "paragraphs" option. Spreadsheets have a carriage return character after every row, and databases have one after every record.

Document and Application Compatibility

A transferred document may be less useful than the original because unique formats may be lost in the translation. Little standardization of file formats exists, even among applications of the same type. Almost all word processors allow boldface text, variable margins, and page headers, for example, but *WordStar* accomplishes that formatting one way on the IBM PC, and *MacWrite* does it another way on the Macintosh. If you simply transfer a *WordStar* document to the Mac and open it with *MacWrite,* it will be full of strange characters—the result of *MacWrite* misinterpreting the *WordStar* formatting conventions. Programs like *MacLink* can translate a *WordStar* document to another format, or you can run a filter program that converts the document to an ASCII file.

Several file formats help make spreadsheet and database files interchangeable between computers. SYLK, a file format developed by Microsoft, is capable of representing all values, formulas, and relationships in a *Multiplan* spreadsheet. DIF is the file format developed by Software Arts, the company that wrote *VisiCalc.* DIF stores values only—no formulas or relationships. Lotus uses the WKS format to completely represent a *1-2-3* document. A few application programs can open documents saved in any of several file formats. For example, *Excel* on a Macintosh can open documents created on an IBM PC by *1-2-3* or *Multiplan. Excel* can also save documents on a Mac in WKS format for *1-2-3* or in SYLK format for *Multiplan. Jazz* has a desk accessory that converts a *1-2-3* document in WKS format or a *Multiplan* document in SYLK format to *Jazz* format, but not the reverse.

The greatest degree of format compatibility exists when the same application program runs on both the Macintosh and the PC. For example, *Multiplan* on the PC can open a worksheet created by *Multiplan* on the Mac, and vice versa, if the original worksheet was saved using the SYLK option. Similarly, *Microsoft Word* version 1.05 includes a Macintosh utility program that converts a *Microsoft Word* document between the PC and the Macintosh formats. However, some Mac and PC versions of the same program, such as *pfs:file* and *pfs:report,* have incompatible file formats that can't be converted yet.

One of the most powerful features of *MacLink* is its ability to translate the special formatting characters used by one application to the corresponding characters used by another (see Figure 3). For example, *MacLink* can convert a *WordStar* document on a PC into a *MacWrite* document on the Mac, preserving attributes such as boldface or italic characters and underlining, as well as document attributes such as the margin and tab settings. Spreadsheet conversion is another task that *MacLink* handles well. When you convert a spreadsheet file, cell references and formulas from one application program are converted to their counterparts in another application.

1stPORT is a communications program that also allows you to convert between file formats, though the formats it can convert are limited to SYLK, 1stBASE, text, and DIF (see Figure 4). The 1stBASE format is useful only if you are using the *1stBASE* database program. The DIF format allows you to transfer only values from one spreadsheet file to another, since formulas are not translated.

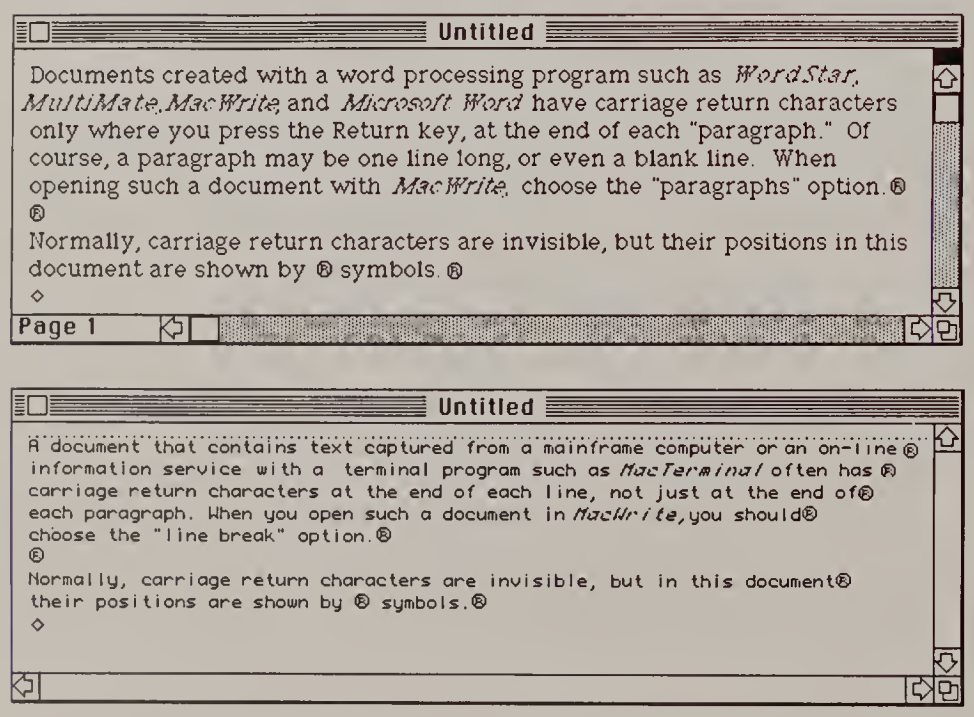


Figure 2

Invisible carriage return characters may occur either at the end of each paragraph, as in the top document, or at the end of every line, as in the bottom document.

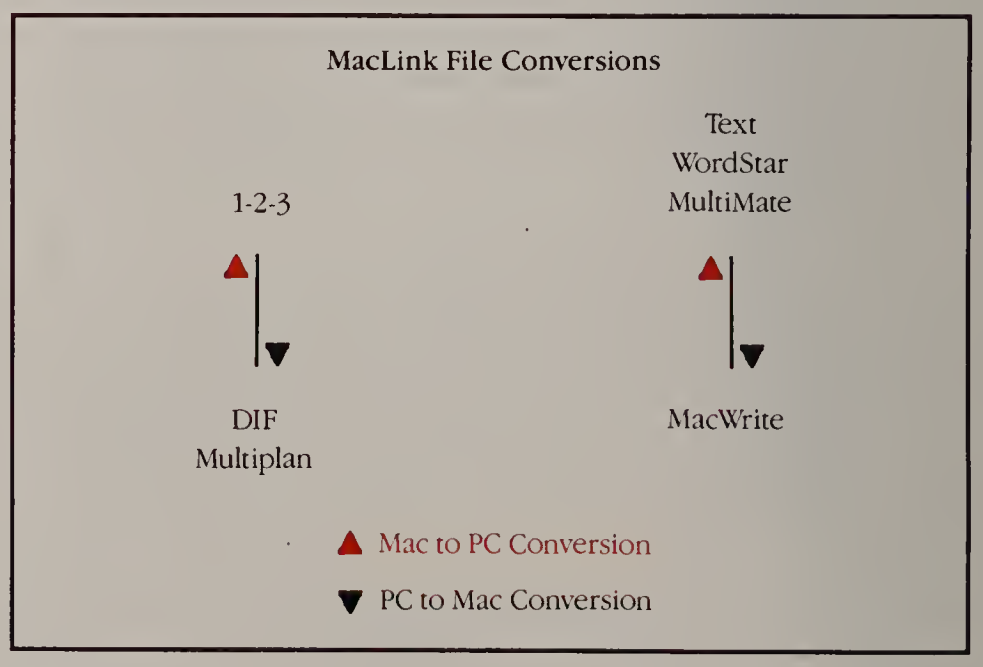


Figure 3

MacLink's *file conversion features allow you to convert between several spreadsheet, database, and word processing document formats.*

Plain Text Documents

Often, the only way to use a file from the Mac on the PC, and vice versa, is to first convert the file to plain text. Almost all application programs can read plain, unformatted text files. Word processors treat them as text, spreadsheets treat them as rows and columns of values, databases treat them as fields and records, and programming languages treat them as program listings. Graphics applications, on the other hand, can't do much with a plain text file, since images are usually stored as a coded series of bits rather than as text characters.

It's easy to strip the formatting from a document, converting it to a plain text file. On the Macintosh, you select the Text Only option in the Save As dialog box. PC applications like *Microsoft Word* have a similar option.

Another way to create a plain text file is to run a program that filters the formatting information from a document, leaving the plain, unadulterated text. Filter programs can be used before or after transferring a word processing file. But while a filter program can convert a word processing document, it can't convert a formatted spreadsheet or database file to a plain text file. The program *File Filter* works on the Macintosh. Similar programs are available for the PC from CompuServe or other bulletin board systems.

Selecting a Program

Of the many combinations of cabling, modems, communications programs, and document formats, no set-up stands out as the best for all situations. Your choice of cabling and modems depends on the proximity of the two computers, your budget, and the amount of transferring you'll do. Your choice of communications program also depends on the volume of transferring you anticipate and whether you want to use the same communications program for general telecommunications. Experience is also a factor. If you don't have much experience with communications programs, you would do best to use direct cabling and a special communications program such as *MacLink*. If you are more experienced, you should have no trouble coping with the complexities of modems and general-purpose communications programs. Whatever your choice, persevere. In your role as mediator, you will sometimes have to do a bit of coaxing to get both sides to overcome their differences and talk to each other. □

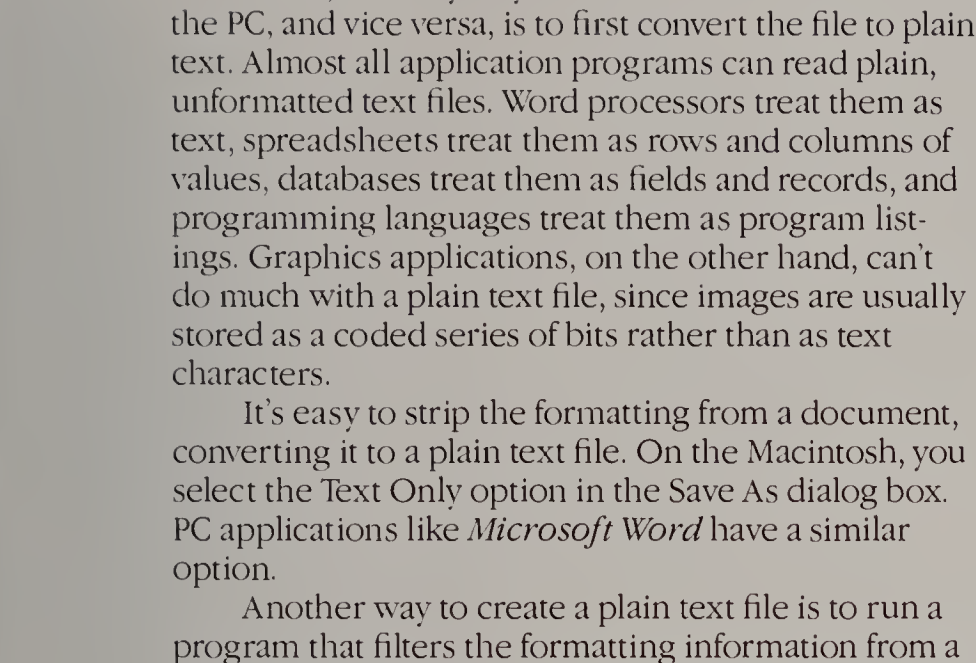


Figure 4
1stPORT *specializes in converting spreadsheet and database file formats. You can also convert information stored on the Clipboard.*

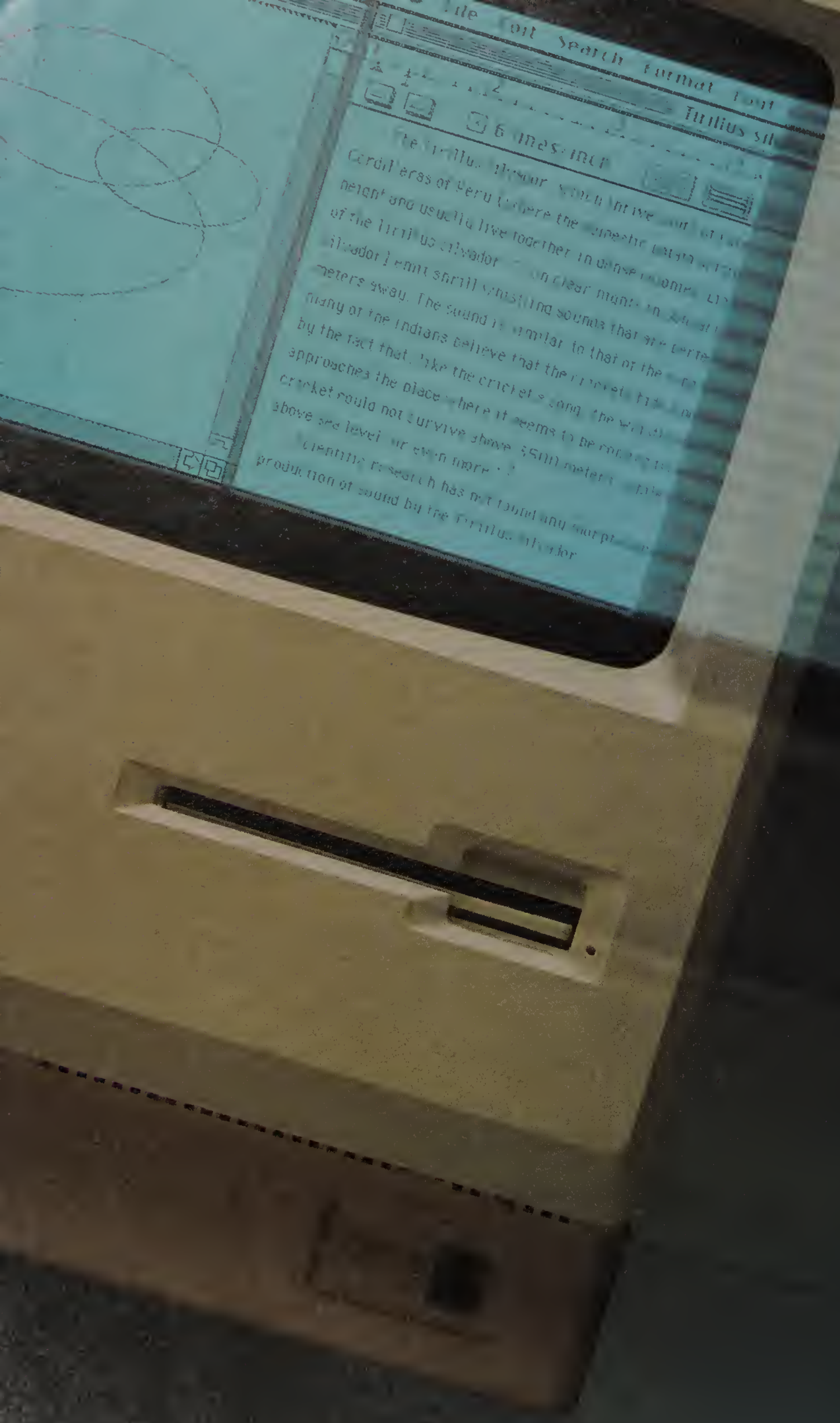
Lon Poole is a Contributing Editor of Macworld.

MacTerminal
Apple Computer, Inc.
20525 Mariani Ave.
Cupertino, CA 95014
408/973-3317
List price: $99

MacLink
DataViz, Inc.
16 Winfield St.
Norwalk, CT 06855
203/866-4944
List price: $125, with 8-foot cable $155

1stPORT
Desktop Software Corp.
244 Wall St.
Princeton, NJ 08540
609/924-7111
List price: $95

File Filter
Berkeley Macintosh User Group
1442A Walnut St.
Berkeley, CA 94709
415/849-9114
$8 for BMUG disk number 2.1



The Mac's Best Performance

Three inexpensive programs that can help speed up the Macintosh

Jim Heid

Most Macintosh owners are familiar with the casual pace at which the Mac opens and quits applications and performs other tasks that require disk access. Some people have even spent several thousand dollars just for the extra speed provided by a hard disk. But 512K Mac owners can now purchase inexpensive programs that speed up the performance of their computers. The three types of software—RAM disks, TurboCharger, and the Switcher—perform their magic in different ways, each offering its own advantages and disadvantages. Instead of asking, "Which one is best?" you should ask, "Which one is best for me?"

RAM disks, such as Assimilation's *Mac Memory Disk*, turn a portion of the Mac's memory into an electronic disk drive that operates faster than a hard disk. Nevins Microsystems' *TurboCharger* boosts performance by keeping frequently used areas of a disk in memory, decreasing the need for disk access. Apple's Switcher lets you keep several applications in memory simultaneously so you can switch between them with a click of the mouse.

The best alternative for you depends on your work habits. The appropriate product can make a 512K Mac sing and increase your productivity; the wrong product won't help and may complicate your work routine. Do you frequently alternate between two applications, such as *MacDraw* and *MacPaint*? Do you use products that are made up of more

than one program, such as *ConcertWare, DB Master,* or *pfs:file* and *pfs:report?* Do you use 512K-only products such as *Excel, Jazz,* or *Helix?* Are you a font fanatic whose font menus sag to the bottom of the screen? Your answers to those questions can help determine which performance booster is best for you.

RAM Disks

RAM disk programs were the first performance boosters for the 512K Macintosh and have been the subject of lively debate (see "The Invisible Disk," *Macworld,* March 1985, and "RAM Disk Response," *Letters, Macworld,* June 1985). Some people swear by RAM disks, while others point out that the Mac's large System Folder limits their usefulness.

The advantage of a RAM disk is that it is all electronic, transferring information much faster than do disks, which depend on the disk drive's relatively slow-moving mechanical parts.

A RAM disk's electronic advantage is also one of its drawbacks. Because a RAM disk's life ends when the power goes, you must copy the System Folder and the applications you plan to use into the RAM disk every time you start the Mac. Most RAM disk programs perform the procedure automatically, but it adds about 30 seconds to the Mac's startup time. Moreover, you must copy documents created on a RAM disk—including the Scrapbook file if you added to it—to a disk before shutting down. Most people avoid using the RAM disk for document storage because a momentary power loss or system error can cause you to lose any unsaved information in a document.

The biggest drawback of Macintosh RAM disks, however, is that they are limited by the amount of available memory and by the size of the Mac's System Folder, which must be stored in the RAM disk to receive its speed benefits. After you add even a relatively lean System Folder, a RAM disk can hold only one average-sized—100K to 250K—application program. One way around the memory limitation is to upgrade the Mac to 1 or 2 megabytes of RAM.

Sometimes One Is Enough

If you regularly use just one application, a RAM disk's inability to hold more than one program is not a serious limitation. If your computing habits involve lengthy writing sessions with *Microsoft Word,* long stretches at *MacDraw*'s drafting table, or any other long sessions with a single program, place the application program in a RAM disk along with a System Folder (see Figure 1). The RAM disk boosts the application's performance by eliminating the disk accesses that occur when you change fonts and open or close desk accessories or when portions of a program are swapped between disk and memory. A RAM disk also speeds printing, because the print file that an application program normally creates on disk before printing is created on the RAM disk.

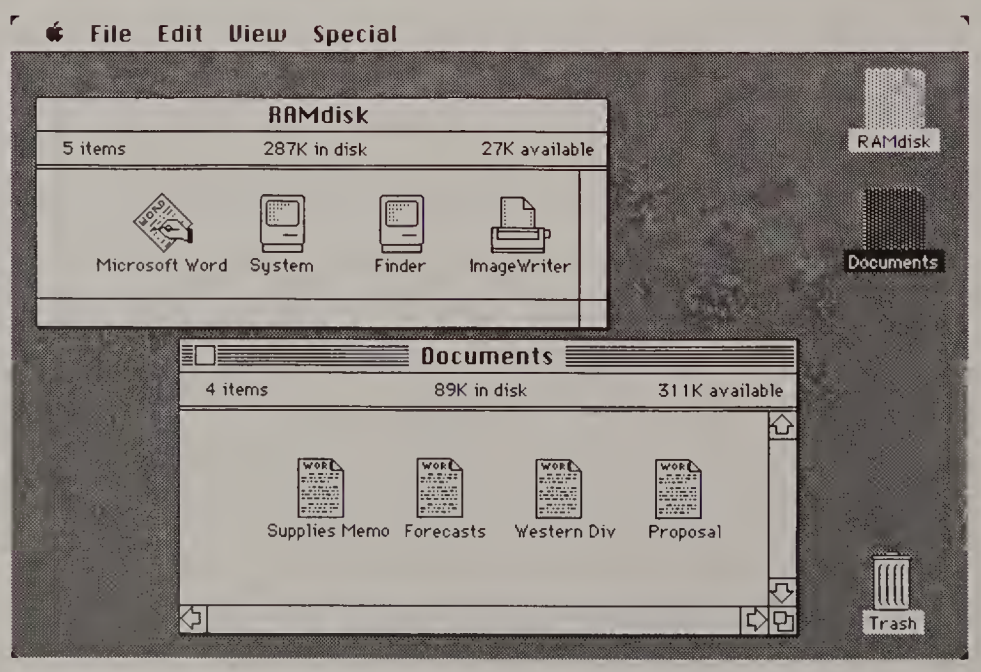


Figure 1
RAM disk software turns part of the Mac's memory into the electronic equivalent of a disk drive. Because of the large size of the Macintosh System Folder, a RAM disk with a System Folder leaves only enough room for one average-sized application.

RAM disks have other useful applications. *ConcertWare* consists of three separate programs: a music player, an instrument maker, and a music writer. If you place all three programs in a RAM disk, you can switch among them almost instantaneously. Many program development systems also require that you work with more than one software tool—for example, an editor and a compiler. Placing the programs together on a RAM disk makes switching between them faster and dramatically decreases the time required to compile a program.

Because a RAM disk serves as an extra disk drive, it can add flexibility to storing programs and documents. For example, Stoneware's *DB Master* database manager lets a single database span more than one floppy disk. If you place the *DB Master* Use File application and a System Folder in a RAM disk, you can use both the internal and external disk drives for data storage, allowing you to create an 800K database.

RAM disks also speed work with the Mac's System files. If you want to add or remove several fonts or desk accessories using Apple's *Font/DA Mover,* create a RAM disk containing the System file you want to alter, perform the alterations on that file, and copy the file back to its disk.

RAM disks are ideal for lengthy work sessions with a single program, for moving between programs in multiprogram software such as *ConcertWare,* and for speeding up font and desk accessory moving. RAM disks, however, are not suited for moving quickly among several application programs, nor are they suited for use with a full entourage of fonts and desk accessories or with 512K-only applications like *Helix, Jazz,* or *Excel.* For such uses other performance-tuning options are more appropriate.

TurboCharger

Although it doesn't provide the speed of a RAM disk, a Macintosh equipped with Nevins Microsystems' *TurboCharger* is a better all-around performer. *TurboCharger* is a *disk cache* utility, which means that instead of loading an entire program into memory at once, as does a RAM disk, *TurboCharger* monitors the Mac's disk activity and stores in memory just those portions of the program that you use most frequently. With *Microsoft Word* you might regularly use the portion of code that tells *Word* how to search for text or how to set up footnotes. With *Chart* it might be the program code that displays

the various chart designs available from the Gallery menu. With MacBASIC it might be the code that turns the debugger on and off. In short, any portion of a program that isn't loaded into memory when a program opens but that is called during its operation is a candidate for storage in a disk cache.

When you choose to carry out an operation, such as searching for text, the Mac first checks with *TurboCharger* to see if that portion of the program is already in memory. If so, the Mac reads it from memory instead of from disk, making the computer perform as though it had a RAM disk. When the Mac reads disk areas from the disk, it performs normally.

The Pros

TurboCharger is suitable for a wider range of applications than a RAM disk. If you use one application for long periods of time, repeating tasks such as opening and closing documents, changing fonts, searching for text, and using desk accessories, *TurboCharger* can boost performance because more program code and fonts are stored in memory than with the usual disk storage scheme. With *TurboCharger* you can load the System file with as many fonts and desk accessories as you like because only the ones you use in a given session are stored in the disk cache. *TurboCharger* does not improve the speed of tasks the first time you perform them because it must cache appropriate sections of the program for quick reference thereafter.

TurboCharger also boosts performance if you frequently change among two or more programs, using each only briefly before changing to another program. Moving between *MacWrite* and *MacPaint* is one example. In my tests *MacWrite* took approximately 27 seconds to open the first time, and *MacPaint,* 17 seconds. Subsequently, however, *MacWrite* opened in 15 seconds, *MacPaint* in 12. Also, the desktop and the disk icons appeared sooner when I quit each program, indicating that portions of both programs, as well as the Finder, remained in the disk cache. Space in the disk cache is finite, so the longer you work with a single application program, the greater the likelihood that you may replace previously stored sections of other programs. When you subsequently switch applications, you may have to do without the performance benefits of *TurboCharger* until you replenish the disk cache as you work.

TurboCharger is especially suited to database management applications involving frequent searching and sorting. Because more of the database than usual is kept in memory, the time required to search and sort records is decreased dramatically.

The Cons

Because *TurboCharger* doesn't provide the immediate speed improvement of a RAM disk, it is valuable only when you regularly repeat certain software tasks in a work session. If you only open a document once and make a few changes, the program doesn't help.

Like RAM disks, *TurboCharger* has limited value when used with 512K-only application programs that require large portions of the Macintosh's memory. You can use *TurboCharger* with Odesta's *Helix,* for example, but due to *Helix*'s large size, you're restricted to a disk cache of 64K or less (see Figure 2). A smaller cache means that less program code can be stored in memory, decreasing *TurboCharger*'s effectiveness. Finally, at this writing *TurboCharger* does not operate on the discontinued Macintosh XL or with any of the hard disks available for the Mac. That isn't a major drawback, however, because hard disks run fast enough to make *TurboCharger* unnecessary.

Because *TurboCharger*'s ability to boost performance depends on the way you work, perhaps the best way to judge whether it can help you is to listen to the Mac during a typical work session. If the disk drives remain quiet most of the time, *TurboCharger* won't do much for you. If, however, the drives are accessed frequently, *TurboCharger* is worth considering.

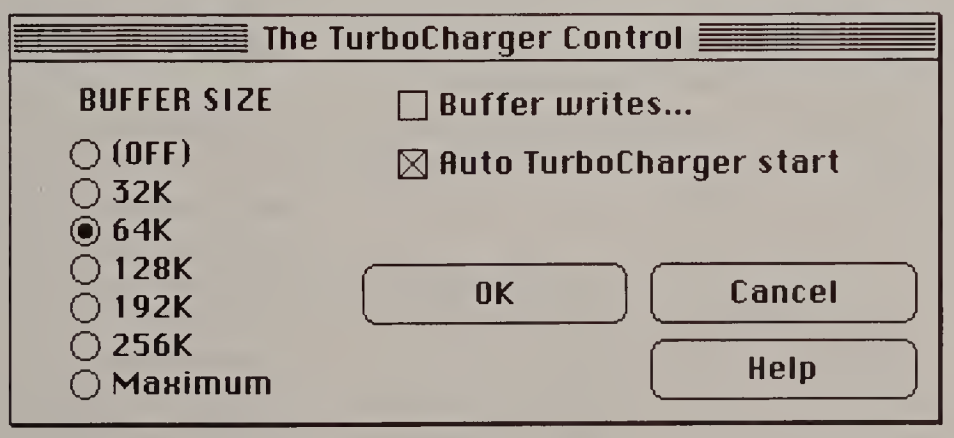


Figure 2
TurboCharger *improves performance by creating a disk cache. The Buffer Writes option stores information in the cache that would normally be saved on disk, saving the information only when you eject the disk. This further boosts performance but results in data loss if the Mac crashes before the information is saved.*

The Switcher

The Switcher approach to performance tuning is one that James Bond would appreciate. Bond's spy car turns from a road car into a submarine into a helicopter at the flick of a switch. Similarly, a Switcher-equipped Macintosh lets you turn from word processing to database management to programming with the click of a mouse button.

The Switcher divides the Mac's memory into sections and lets you store an application program in each section, almost as if each were a separate computer. You can switch from one application to another by clicking the mouse in a small, two-headed arrow that the Switcher adds to the menu bar (see Figure 3). When you click on the arrow, an application instantly slides into view, pushing the current application off the screen.

Manipulating Memory

The Switcher, which runs on only a 512K Macintosh, is preset to give each application 128K of memory. However, putting an application in only 128K eliminates the speed benefits of a 512K machine. Hard disk owners will probably not notice this slowdown because hard disks transfer information faster than floppy disks. You can, however, allocate more or less memory to an application program. Generally,

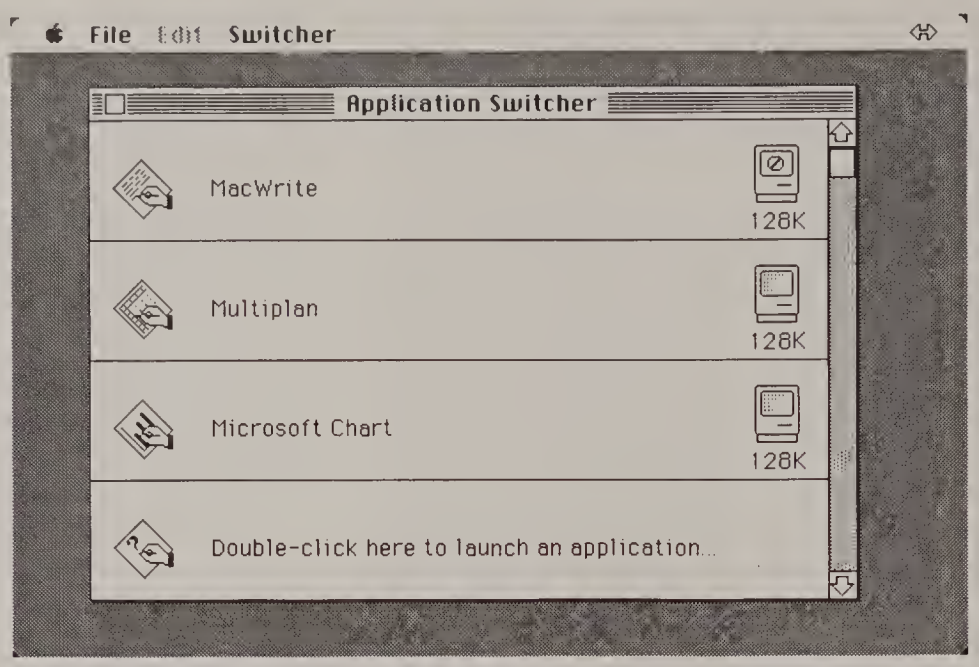


Figure 3
You start an application under the Switcher by double-clicking in one of the "Switcher slots." The Switcher adds a two-headed arrow to the menu bar. Clicking on the arrow's left side switches to one application, clicking on the right switches to another, and clicking in the middle returns you to the Switcher.

giving an application more than 128K lets it operate faster, since more of the code can be held in memory at once. Giving an application program less than 128K lets you conserve memory for programs that benefit from more than 128K of memory, but there is a catch: most programs given less than 128K of memory perform poorly. *MacWrite,* for example, can operate in 110K of memory, but it does so sluggishly and frequently displays an alert box reading "Almost out of memory. This operation can't be undone."

You can save some memory by specifying that the Switcher not save the screen image of an application program when you switch out of it. Not saving the image saves 22K of memory but also slows switching, because the application recreates the screen each time you switch into it.

The memory-juggling game influences the number of application programs you can keep open at once. You can open three 128K programs simultaneously while saving the screen image for each, and four by not saving the screen image and not using certain memory-consuming Switcher options (see Figures 4 and 5).

Clipboard Customs

Other Switcher features let you tailor the program to your work requirements. The Switcher normally allows you to transfer information between different constituent documents running under the same application program. For example, you could copy a section of text from one *MacWrite* document to a second *MacWrite* document. However, each document requires that a separate copy of the program be in one of the Switcher's slots. You can also specify that the Switcher transfer the contents of the Clipboard between different types of application programs when you switch. For example, you can copy a *MacPaint* drawing to a *MacWrite* document. You can also give each application its own Clipboard so you could cut and paste text in *MacWrite,* switch to *MacPaint,* and cut and paste graphics without disturbing *MacWrite*'s Clipboard.

If you frequently use the same combination of applications together, you can use the File menu's Save Set command to save the list of applications as well as any custom memory settings as a Switcher document. You can then open the Switcher and the applications by simply double-clicking the document's icon. Better still, you can use the Set Startup option in the Finder's Special menu to specify the Switcher as the startup application. From that point on, the Switcher and the applications open automatically when you start up.

Instant Integration

The Switcher's approach to performance tuning makes it useful for some applications and more trouble than it's worth for others. The Switcher works best for projects that involve two or three applications and lots of cutting and pasting. Creating a newsletter with a publishing program is one example. A Switcher set comprising *Microsoft Chart* or *MacPaint* and *MacPublisher* lets you create graphs or illustrations and transfer them to the newsletter. By the way, for best performance give *Chart* 256K of memory.

A *Multiplan, Chart,* and *MacWrite* combination is equally useful. You can create a spreadsheet model, pose "what-if" questions, and copy a portion of the model to *Chart* to illustrate your conclusions. Finally, you can copy the chart into a *MacWrite* report. Used this way, the Switcher turns independent applications into integrated ones. In short, any related applications that you use together to perform a task are ideal candidates for the Switcher.

You can also make the Finder one of the Switcher's constituent applications. Doing so lets you copy and remove documents, keep an eye on the amount of available disk space, and organize documents into folders, all without having to quit the other active applications. To quit the Finder and free its memory for another application, double-click on the Switcher icon.

Would You Rather Fight Than Switch?

Unfortunately, computing with the Switcher can sometimes invite disaster, not because of any faults in the program but because most applications predate the Switcher and weren't designed to share the Macintosh's memory with others. Moreover, not all software developers follow the programming guidelines inscribed in Apple's *Inside Macintosh.* Their omissions aren't noticeable when the programs are used by themselves; however, when they are used with the Switcher, data can be lost, and system errors can occur. For example, a system error occurred when I tried to use *pfs:file* and *pfs:report* simultaneously. As a result, I destroyed the entire database. The best way to avoid this problem is to test the applications you want to use to make sure they can coexist peacefully. Most can, but you can avoid losing important information by performing tests with expendable documents, and with expendable disks if you can copy the applications.

You can also cause a system error by moving fonts and desk accessories under the Switcher. Application programs cannot always determine that you've changed the System Folder and may try to use a font or a desk accessory that's no longer available, causing a system error. When the Finder is in a portion of the Switcher, you can cause

another system error either by ejecting disks being used by active application programs or by removing the temporary work files that many programs create. The temporary work files often have cryptic names such as ScrapFile or MW0001 and usually appear on screen as generic document icons.

With certain application programs, the Switcher can be inconvenient. Because of the copy-protection scheme on Microsoft products, for example, starting the *MacWrite, Multiplan,* and *Chart* combination takes over 3 minutes and requires six disk swaps. Generally, any application program that requires you to insert a master disk adds two disk swaps in the startup process.

Should You Switch?

The Switcher is ideal for lengthy tasks that involve transferring information among a set of application programs. Because of the time, and in some cases the disk swaps, required to get a set of applications up and running, the Switcher is not suited to short sessions with a number of applications running on disk. Finally, I don't recommend the Switcher for a Macintosh novice. To use the Switcher effectively, you should understand the effects of allocating memory space, and you should be aware of the problems that can result from altering the Mac's System file or running applications that don't obey all of the Mac rules.

Closing the Hood

There you have it: three performance-tuning programs, each radically different from the others, each suited to specific tasks. RAM disks are inexpensive and ideal for lengthy sessions with a single program, for moving between programs in multiprogram packages such as *ConcertWare,* and for moving fonts and desk accessories. *TurboCharger* is more expensive but more versatile, ideal for lengthy sessions with a single application or for short sessions with a variety of applications. The Switcher is the most specialized performance booster of the bunch. It's ideal for tasks involving much cutting and pasting between applications but can be inconvenient when used with copy-protected applications and requires more time to set up than the others.

Figure 4
The Switcher's Options window lets you tailor the Switcher to your needs. Turning off the Switcher in Rotation, Always Convert Clipboard, and Room for LaserWriter options conserves memory and is necessary for running four applications at once.

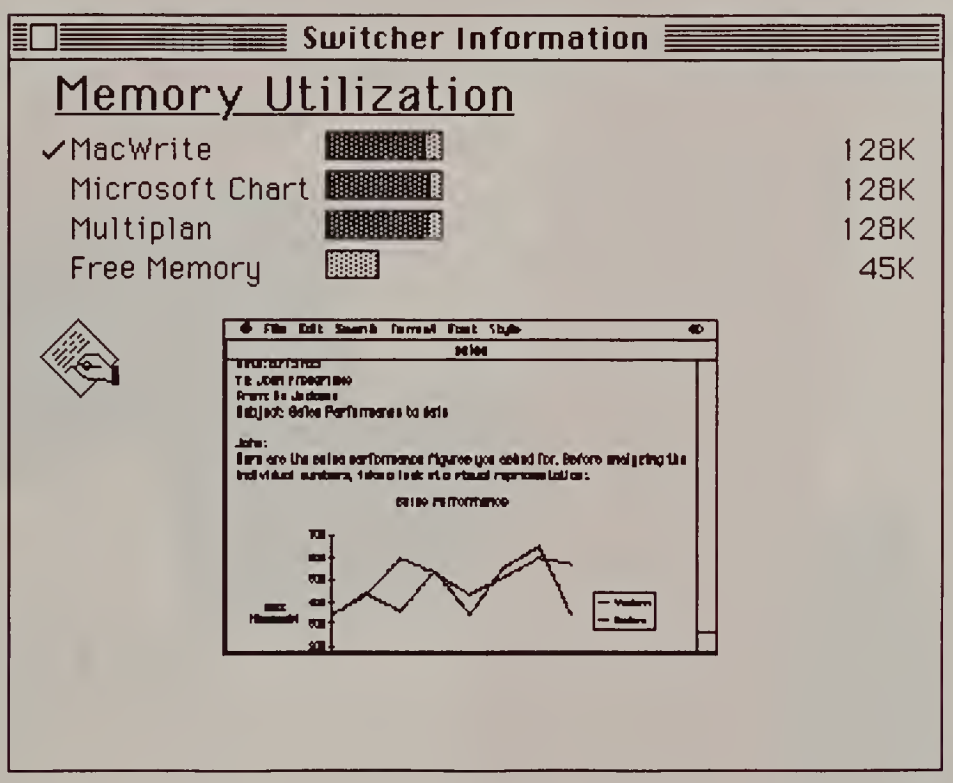


Figure 5
The Switcher's Information window provides a visual indication of the memory used by each application and of the amount of free memory. You can also switch into an application by clicking on the scaled-down screen image. If you've chosen not to save an application's screen image, only an empty rectangle appears.

The key to making the Macintosh perform its best is not a particular product but an understanding of how each product works. With this in mind, you can keep a variety of performance boosters in your toolbox and choose the one that's best suited to each task. □

Jim Heid is a Contributing Editor of Macworld.

Mac Memory Disk
Assimilation, Inc.
20833 Stevens Creek Blvd.
Cupertino, CA 95014
408/446-0797
List price: $29

TurboCharger
Nevins Microsystems Inc.
210 Fifth Ave.
New York, NY 10010
212/563-1910
List price: $95

Switcher
Apple Computer, Inc.
20525 Mariani Ave.
Cupertino, CA 95014
800/538-9696, 800/662-9238 in California
List price: to be announced

Without question, the LaserWriter has the potential to revolutionize the printing business by allowing Macintosh owners to emulate professional typesetters. The LaserWriter's advantages include magnificent printing clarity, dramatic speed, and liberation from pin-feed paper. This technology sets a new standard

Eye to Eye with the LaserWriter

Neale McGoldrick

for personal computer printers, but it will also require reorientation for Imagewriter users.

When you prepare text for LaserWriter printing, the maxim "what you see is what you get" still holds for the most part, but a number of important adjustments need to be made. When the LaserWriter was introduced, *MacDraw* and a new version of *MacWrite* were released to work with the printer. In time, most Mac software should be able to take advantage of the new printer's special features.

People who invest in a LaserWriter will find it easy to use and will enjoy experimenting with the final look of their work. Printing with the LaserWriter requires a 512K Mac, but documents can be prepared on the 128K model. Mac users who hope to find computer stores or photocopy shops equipped with LaserWriters to handle their printing have to prepare documents carefully lest the beauty of LaserWriter printing be offset by surprise changes in spacing and layout.

LaserWriting with MacWrite

The LaserWriter can print any *MacWrite* document in, or converted to, version 4.2 or later. For final printing you also need to open the document using a copy of *MacWrite* with the LaserWriter fonts installed in the System Folder. There are four such fonts (three of them approximating familiar Imagewriter fonts): Times (New York), Helvetica (Geneva), Courier (Monaco), and Symbol (a font of mathematical and scientific symbols, primarily Greek). New fonts can be added with the Font Mover or the Printer Installer, which automatically adds appropriate fonts to any application (see Figure 1). Copies of *MacWrite* 4.2, the LaserWriter fonts, and the Printer Installer are available from Apple dealers at no charge.

The on-screen appearance of the LaserWriter fonts can be deceptive; though the letters may seem crude and the spacing may look squeezed, the final product will be beautiful. For example, 9-point type is almost illegible on the screen. To use it, type the document in 12- or 14-point type and change the type size before printing. The LaserWriter prints all sizes of its fonts perfectly, but the small sizes are illegible on screen unless they are installed on disk.

Enhanced styles also look somewhat different on screen. Bold, outline, and shadow type styles take more space on screen than they do on paper. Shadow and italic styles appear more subtle on LaserWriter printouts than on screen or on Imagewriter printouts (see Figures 2 and 3).

Laser versus Image

For professional-looking printouts of *MacWrite* documents, you must switch from the Imagewriter fonts to their LaserWriter counterparts. If you plan to print the same document on both the Imagewriter and the LaserWriter, you should either change fonts when you switch printers or duplicate the document so you have a copy in the appropriate font for each printer. You can automatically convert Imagewriter fonts to their LaserWriter equivalents by clicking Font Substitution in the Laser-

Figure 1
Both LaserWriter fonts and Imagewriter fonts can be reduced and enlarged. The spacing of Imagewriter fonts is wider than that of LaserWriter fonts.

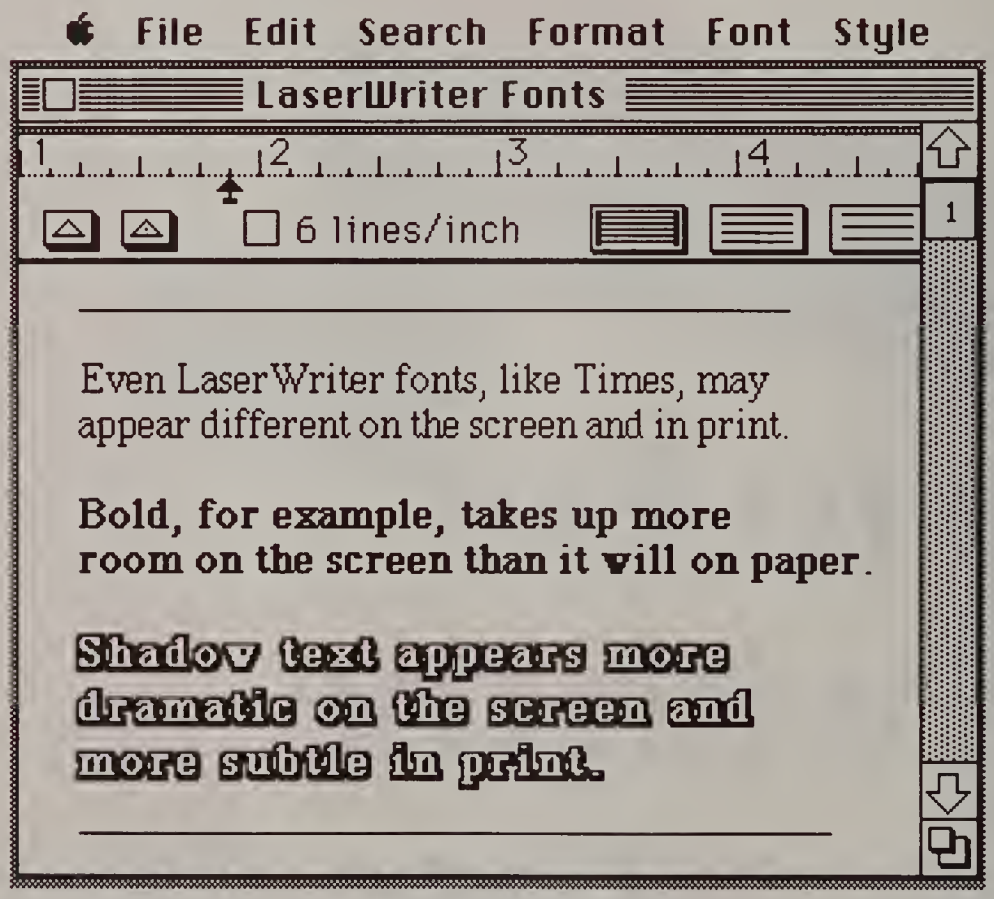


Figure 2
On screen, LaserWriter fonts look like Imagewriter fonts.

Even LaserWriter fonts, like Times, may appear different on the screen and in print.

Bold, for example, takes up more room on the screen than it will on paper.

Shadow text appears more dramatic on the screen and more subtle in print.

Figure 3
On paper, LaserWriter fonts look more subtle. Shadow, boldface, and italic styles look less dramatic.

Writer Page Setup box. You'll get better results, however, by changing the font manually, because the Font Substitution option replaces a font letter by letter and does not adjust interletter spacing. To convert a document typed in New York, for example, highlight the text and select Times from the Font menu.

When you change a document from an Imagewriter font to a LaserWriter font, you see that LaserWriter fonts condense text to take less space than Imagewriter fonts on screen and on paper. A 20-page document can be shortened by several pages when converted from an Imagewriter to a LaserWriter font. As a result you may find it necessary to change spacing, tabs, and page breaks. To avoid some of the reformatting, you can enlarge the LaserWriter type; to approximate the spacing of New York, Geneva, or Monaco in 12-point type, for example, use a 14-point LaserWriter font (see Table 1).

Imagewriter display fonts like London or Venice can also be printed on the LaserWriter. The results look more polished than the same font printed on the Imagewriter but not as good as the LaserWriter fonts themselves. For best results with Imagewriter fonts, use a point size that is installed in your disk's System Folder. In *MacWrite* and *MacDraw,* display type looks fine on screen but not necessarily on paper. Imagewriter characters have extra space between them on a LaserWriter printout, and symbols that merge to form solid lines or borders on the Imagewriter appear individually on the LaserWriter (see Figures 4 and 5).

For *MacPaint* documents you should use the Imagewriter fonts because the LaserWriter reads *MacPaint* text as graphic images, as the Imagewriter does. To take advantage of the LaserWriter's fonts, you have to transfer *MacPaint* graphics to *MacDraw* before adding text.

Reducing and Enlarging

Among the LaserWriter's most useful features is the ability to reduce or enlarge an entire page. Selecting Page Setup on the File menu opens a dialog box that allows you to change the percentage at which the page is enlarged or reduced (see Figure 6). Entering 100 percent yields a printout that is the same size as the original, although

Font name	Point size	Lines per page	Characters per line
New York	12-pt.	30	68
New York	14-pt.	26	60
Times	12-pt.	43	88
Times	14-pt.	34	77
Geneva	12-pt.	28	68
Geneva	14-pt.	24	59
Helvetica	12-pt.	39	77
Helvetica	14-pt.	34	68
Monaco	12-pt.	25	77
Monaco	14-pt.	25	66
Courier	12-pt.	34	77
Courier	14-pt.	26	66

Table 1
Three Imagewriter fonts–New York, Geneva, and Monaco–resemble the LaserWriter fonts Times, Helvetica, and Courier, respectively. However, 12-point Times takes up noticeably less space than 12-point New York. Changing the font of long documents could make a difference of several pages between LaserWriter and Imagewriter fonts.

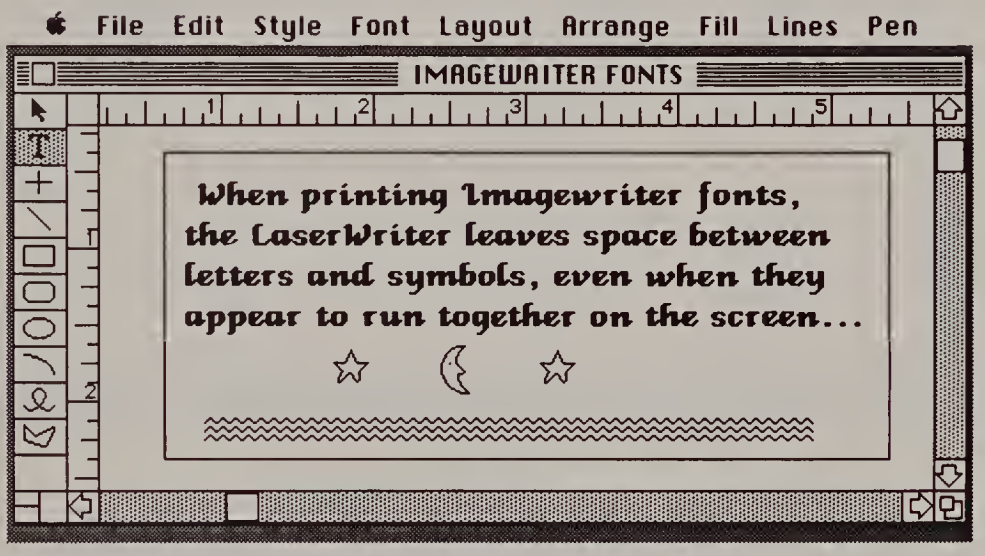


Figure 4
Planning layouts on the screen can be problematic. Comparing this screen image with the printed image in Figure 5 demonstrates how what you see on screen may not be what you get on paper.

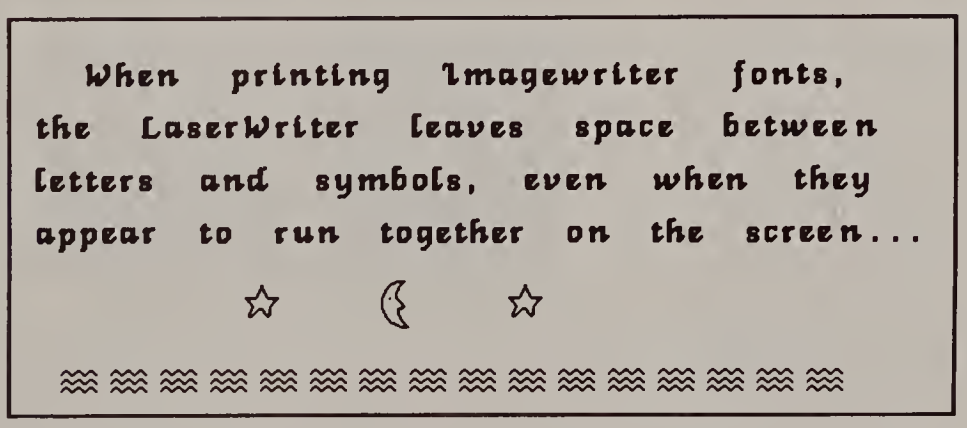


Figure 5
On paper, Imagewriter fonts printed on the LaserWriter appear with wider spacing between letters than when printed on the Imagewriter. Also, symbols that appear connected on screen are separate when printed on the LaserWriter.

the LaserWriter prints bit-mapped graphics, such as *MacPaint* documents, at 96 percent because its higher resolution is not an exact multiple of the Mac's screen resolution. You can enlarge small documents up to four times, or 400 percent of, the original size and reduce large documents down to one-fourth, or 25 percent. A page is reduced or enlarged in terms of its diagonal measure. Reducing a page of text to 50 percent, for example, halves both its length and width, but the reduced page takes up only one-fourth as much space on paper (see Figure 7).

The enlargement feature is useful when you print text or charts on transparencies to use with an overhead projector. Using landscape, or wide, printing across the length of the paper is useful when you prepare such materials. The LaserWriter rotates an image for landscape printing (see Figure 8).

When you change a *MacWrite* page size, all spacing remains proportional, and you don't need to reformat the new page. The ability to enlarge also allows you to print headlines in larger than 24-point type. Select a small font size for regular text and a 24-point font for the headline, then enlarge the entire document when

The ends of lines and page breaks in *MacWrite* documents are not affected by enlargements or reductions. If the enlarged text extends beyond the size of one sheet of paper, the LaserWriter prints the overflow on subsequent pages, which can be assembled for large posters or bulletin board displays.

In *MacWrite* you may find it difficult to predict where the resized image will appear on the page because no Show Page command is available to preview the whole page. In this case what you see is not what you get. The problem occurs because each page is reduced or enlarged as a separate unit, including the 1-inch left margin not shown on screen. For example, text that was 4 inches wide with a 1-inch left margin becomes 6 inches wide with a margin of 1½ inches if it is enlarged to 150 percent. Unfortunately, you can't realign the LaserWriter's paper feed to adjust the margin.

For an on-screen guide to planning enlargements or reductions, use *MacWrite*'s ruler to measure the width of the text. The only way to measure length is by counting lines on screen. Buy an inexpensive proportion guide, available in most stationery or art supply shops, if you expect to do a lot of reducing and enlarging in *MacWrite*. When spacing is critical, use *MacDraw,* which offers features for manipulating layout and viewing the enlarged or reduced image prior to printing.

Layouts in MacDraw

MacDraw was designed with the LaserWriter in mind. Like *MacWrite, MacDraw* handles the LaserWriter fonts, reduces and enlarges images, and prints multiple copies. The program also offers most *MacWrite* text-editing features with the exception of tabs and right-justified text. Most important, it has a Show Page feature that displays reduced and enlarged images as they appear on paper. *MacDraw* even shows several pages of a document on screen simultaneously (see Figure 9). Because *MacDraw* takes a great deal of the guesswork out of preparing layouts for the LaserWriter, the program is preferable to *MacWrite* for designing posters, flyers, and other documents that require accurate spacing on the page.

One virtue of *MacDraw* is its ability to redraw patterns as it enlarges, while maintaining the original scale. While enlargements of *MacPaint* patterns result in an enlarged view of the pattern, *MacDraw* proportionally expands the pattern area and fills it in with the pattern without dis-

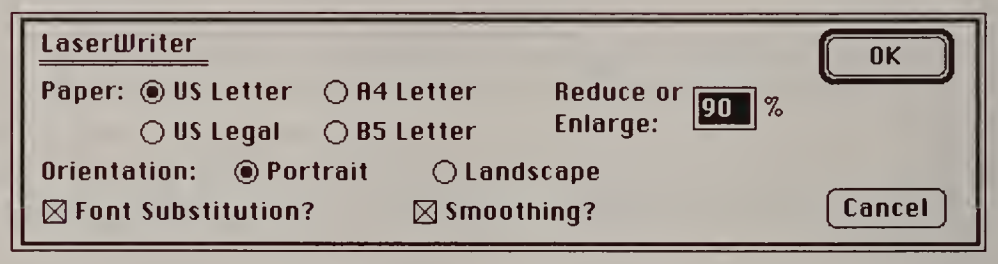


Figure 6
The Page Setup dialog box offers the choice of vertical (portrait) or horizontal (landscape) orientation.

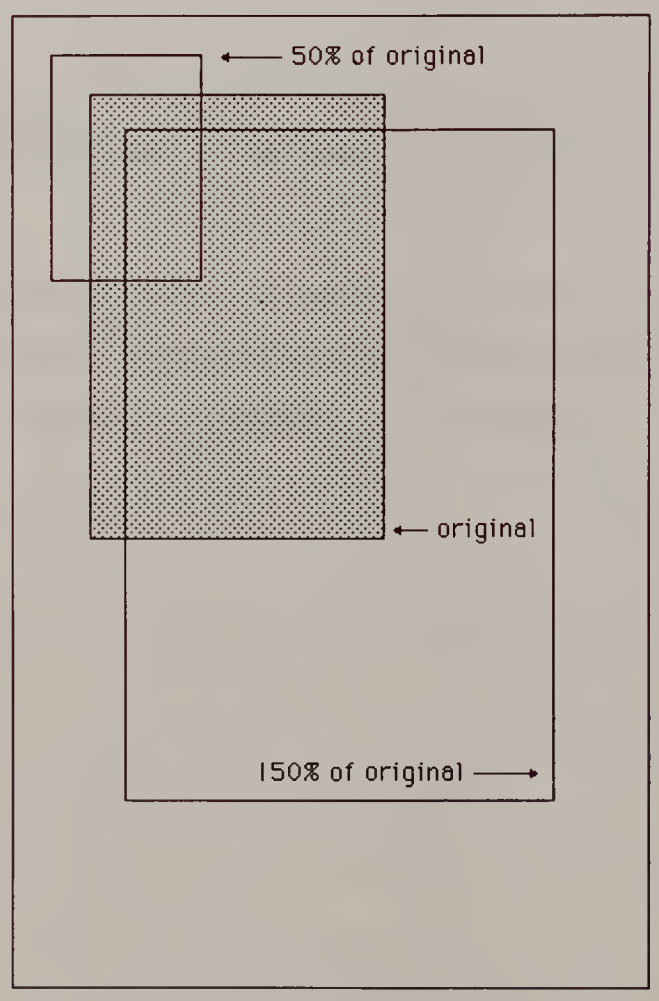


Figure 7
When reducing and enlarging MacWrite *text, take the left margin into account. Margins are changed in proportion to how the text is reduced or enlarged, and the text moves down and to the right on the page. Unfortunately, you cannot realign the LaserWriter's paper feed to adjust the left margin.*

tortion. Figure 10, for example, shows how an enlargement of a brick pattern in *MacDraw* results in more bricks, while an enlargement of *MacPaint* pasted into *MacDraw* results in the same number of bricks, each enlarged proportionally. Keep in mind that printing enlarged *MacDraw* documents is a task with which the LaserWriter takes its time, up to several minutes a page.

MacPaint in MacDraw

Despite earlier rumors to the contrary, *MacPaint* graphics can be used in *MacDraw*. The only limitation is the size of the graphics that can be copied from the *MacPaint* window and pasted via the Scrapbook. Pasting an image into a *MacDraw* document is a simple matter, but once in place *MacPaint* elements should not be moved. *MacDraw* breaks up *MacPaint* graphics along its grid lines as it pastes them into place. It then becomes difficult to reposition the *MacPaint* image without distortion, even with the grid on. A similar problem occurs when you flip or rotate *MacPaint* graphics. The image may look fine on screen, but white spaces appear on paper unless you recombine the image using the Group command. Also, all *MacPaint* images are transparent in *MacDraw*, allowing lines or text underneath to show through. Designs that are moved through the Scrapbook appear opaque in *MacPaint* and transparent in *MacDraw*.

Selecting the Smoothing option in the Page Setup box eliminates the jagged edges of diagonal and curved lines in *MacPaint;* however, the results are sometimes hard to predict (see Figure 11).

MacPaint on the LaserWriter

MacPaint documents in version 1.5 can be printed directly on the LaserWriter in either Print Draft or Print Final mode, but the program does not take advantage of either the LaserWriter fonts or features like enlarging and reducing. *MacPaint* version 1.0 has only a Print Draft command, which performs smoothing. No hard and fast rules exist for using the LaserWriter with *MacPaint* documents. Whether free-form graphics look better on the LaserWriter

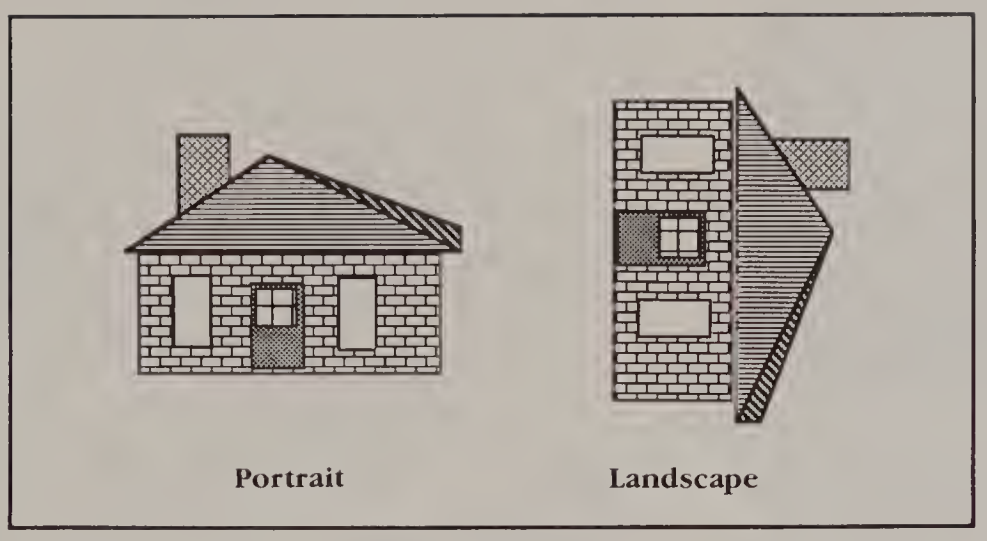


Figure 8
Landscape, or wide, printing rotates geometric figures in MacDraw *but doesn't rotate the enclosed patterns.*

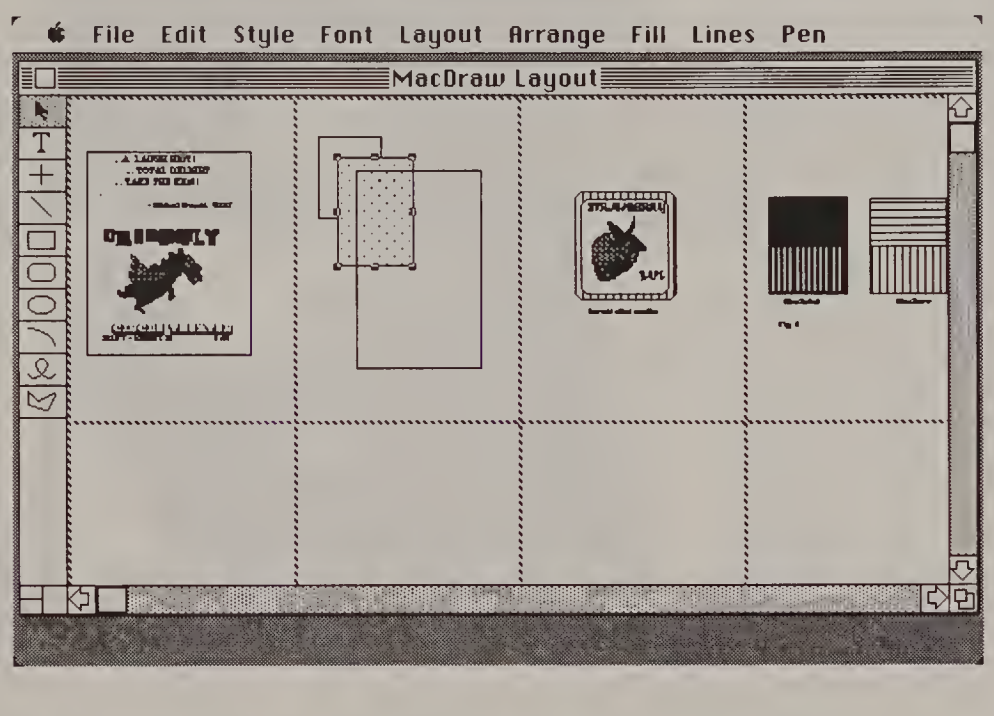


Figure 9
MacDraw *enlarges designs for detailed work or reduces them to show the layout of a series of pages at once.*

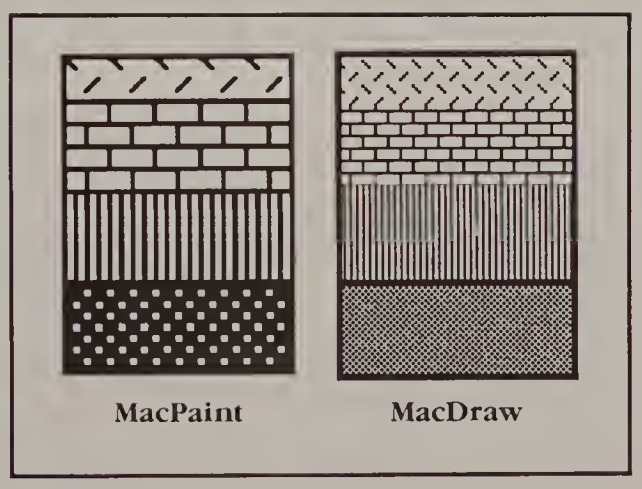


Figure 10
Patterns that are reduced and enlarged in MacDraw *look more professional than those in* MacPaint, *which reduces or enlarges the pattern itself.* MacDraw *proportionally changes the size of the pattern area and fills it in with the original pattern.*

than on the Imagewriter is largely a matter of judgment. When you select the Print Final command, the LaserWriter performs smoothing, cleaning up straight lines and geometrical shapes, though it tends to simplify complex or dense patterns created with overlays of the spray can and mixed brush strokes. Any deviations in patterns or breaks in lines are more noticeable in a LaserWriter printout. The final print quality is also noticeably different. The black and solid gray tones are remarkably even but not as rich as those from a fresh Imagewriter ribbon (see Figure 12).

The Final Printout

The first question a person considering the LaserWriter faces is whether the quality of the final product is worth the cost. The answer depends on how the Macintosh is used. For most tasks, the LaserWriter reproduces the same copy as the Imagewriter in a clearer, tighter format. Getting the most out of the laser printer's features such as enlarging and smoothing requires some experimentation but saves you the considerable cost of professional typesetting for signs, brochures, or newsletters. Once you have had a look at your documents printed out on the LaserWriter, you will be reluctant to go back to anything else. Small businesses accustomed to sending work to professional typesetters will appreciate the convenience and control the LaserWriter offers. For individuals with significant income to dispose of, the printer's speed, quiet operation, and professional results may offset its considerable cost. □

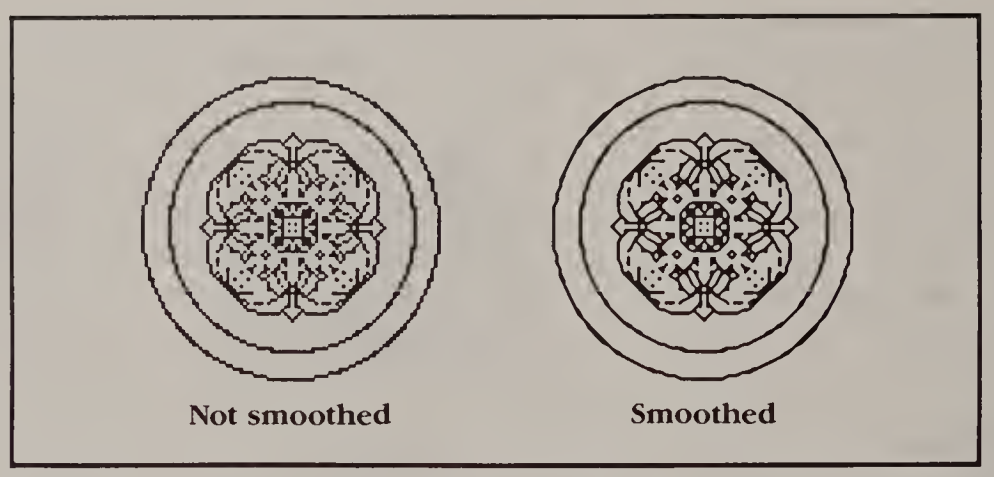


Figure 11
Smoothing, available through the LaserWriter's Page Setup box, cleans up curves and diagonals in MacPaint *and* MacDraw *graphics. Geometric shapes drawn in* MacDraw *are not affected by smoothing.*

Imagewriter printout

LaserWriter printout

Figure 12
While text invariably looks better printed on the LaserWriter, some people may prefer the Imagewriter printout of certain graphics. Digitized images, for example, acquire a rich look with a fresh Imagewriter ribbon. On the LaserWriter the same digitized image has a flatter appearance.

Neale McGoldrick is an educator and an author. Her book Mouseplay *is forthcoming from Datamost.*

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Apple Computer
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Cupertino, CA 95014
800/538-9696, 800/662-9238 in California
List price: $6995

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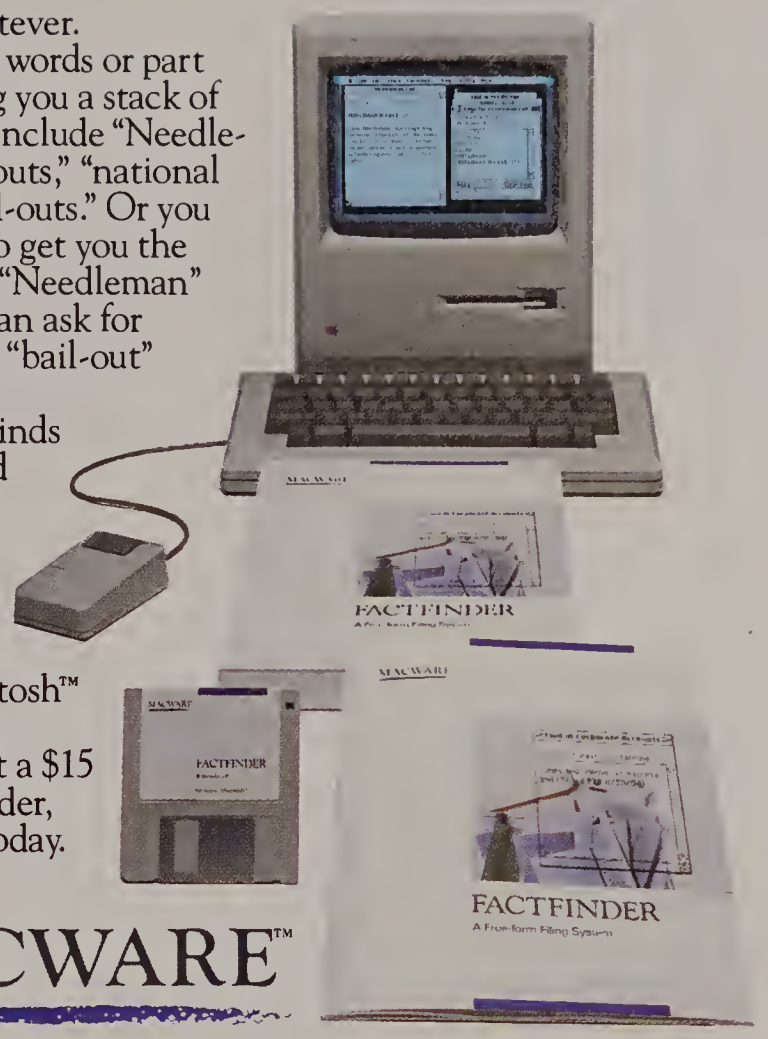

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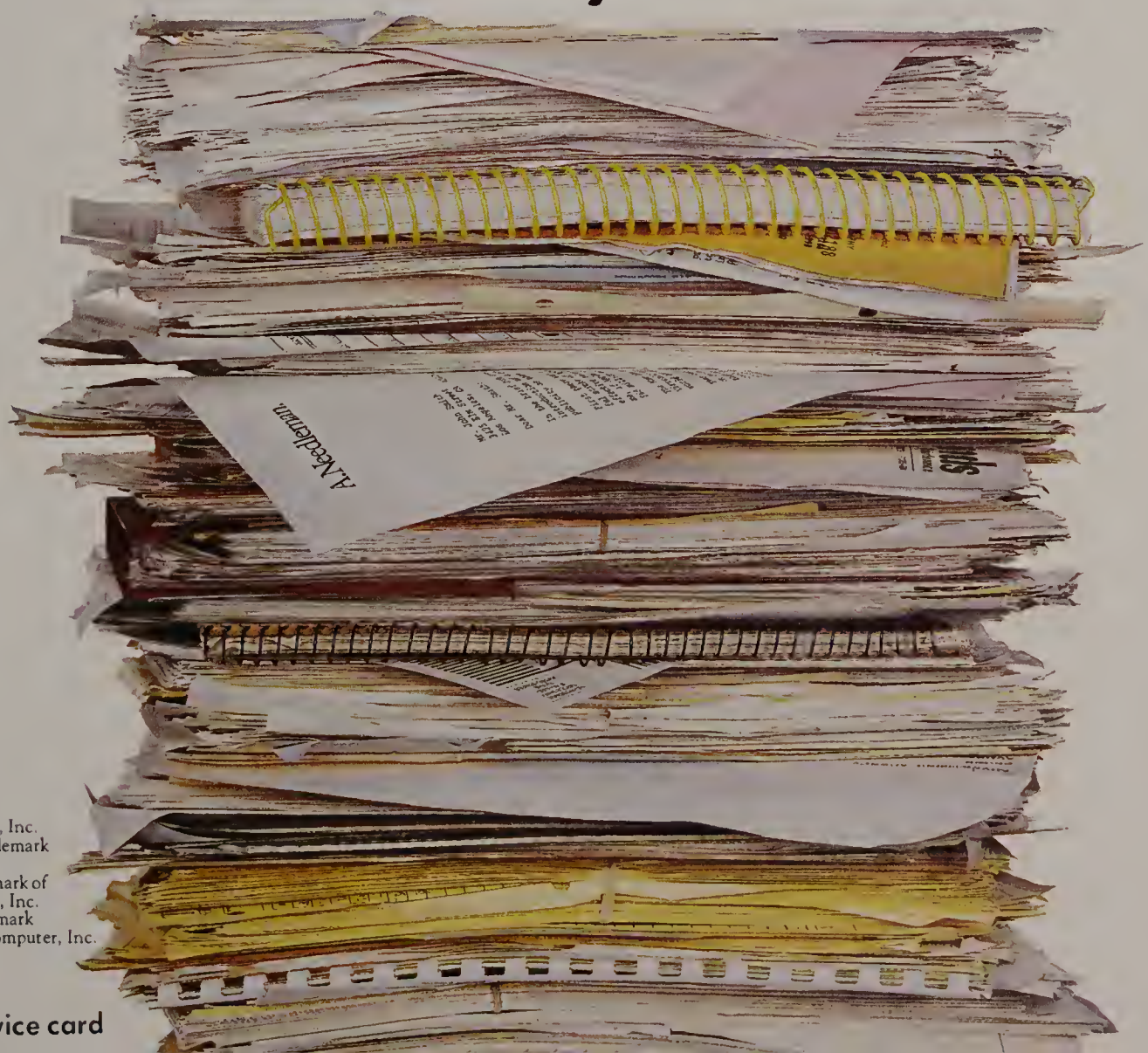

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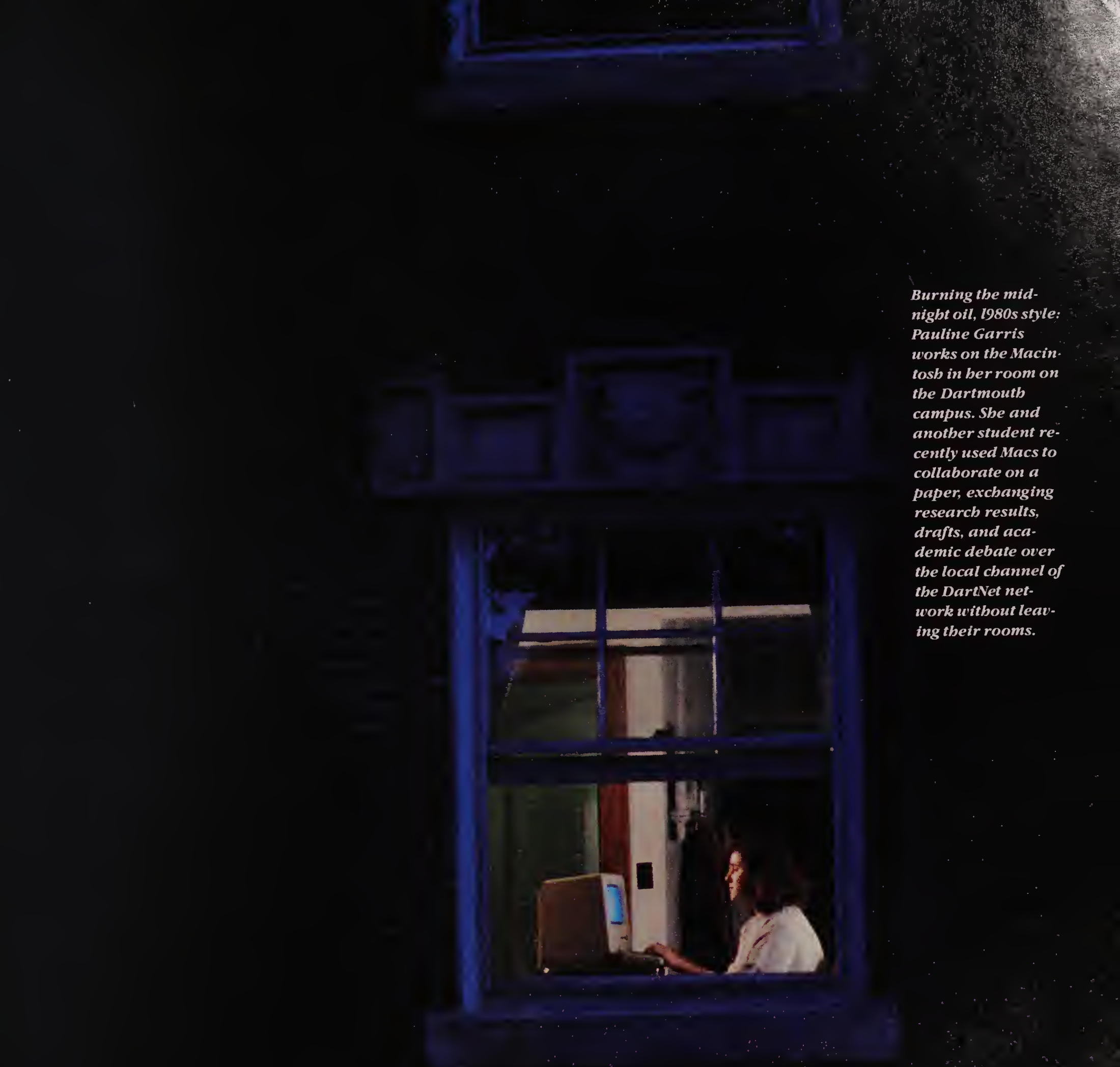
Circle 114 on reader service card

Wheels for the Mind

Jeffrey S. Young

The logo of "Wheels for the Mind," the Apple University Consortium newsletter, is a line drawing in the familiar style of Macintosh packaging artwork. It shows a student riding a bicycle with a Macintosh strapped to the back. The image has proven to be extremely apt because in the year and a half since its release, the Macintosh has raced into the groves of academe with all the speed and grace of a state-of-the-art racing cycle.

You might have guessed that the Macintosh would take college campuses by storm. Computers are essentially mental tools, and in the 1980s an intellectual without a computer is courting obsolescence. Unlike traditional computing systems characterized by rigidly laid out procedures and arcane prompt lines, the Macintosh is designed to eliminate the need for courses in computer literacy.



Burning the midnight oil, 1980s style: Pauline Garris works on the Macintosh in her room on the Dartmouth campus. She and another student recently used Macs to collaborate on a paper, exchanging research results, drafts, and academic debate over the local channel of the DartNet network without leaving their rooms.

The Apple University Consortium members include more than 20 of the nation's top universities. Apple's arrangement is to offer the Macintosh, peripherals such as external disk drives, and program development systems to students and faculty at sharply reduced prices and backed by technical support. The specific ways in which the consortium schools have brought Macintoshes to their faculty and students are as diverse as America's colleges. At Reed College and Drexel University, for example, purchase is compulsory for incoming freshmen. Dartmouth College and the University of Texas strongly recommend that new students buy Macs. At Stanford University and Boston College the computers are merely available at an attractive price. Some schools have clusters of Macs at libraries and dormitories, while others, such as Harvard and Yale, have none available publicly.

'The Mac's better than a typewriter, but I don't think about it any more than the telephone.'

The raison d'être for the consortium is to share information and the educational software–dubbed *courseware* in computing vernacular–developed at the member schools. At Drexel University in Philadelphia, for example, where every freshman has been required to purchase a Macintosh since 1984, both the humanities and the sciences rely on Macintosh courseware. Courseware topics include literary and historical analysis, visual thinking, and photographic darkroom techniques, as well as engineering, biology, chemistry, and medical sciences. The impact of Apple's consortium program has yet to be felt outside the ivory towers, but thousands of college students are going to be entering the work force accustomed to the simplicity of the Macintosh.

On the Dartmouth Campus

The question is how the presence of Macintoshes affects the student and faculty culture at a particular school and, by extension, this generation of American students. To see firsthand the changes the Macintosh has wrought, I traveled to Hanover, New Hampshire, where Dartmouth College is located.

Undergraduate Paul Casella now takes the Macintosh for granted. Though both he and his roommate make room for the computer on their desks, Casella says, "Only the real geeks spend all their time with their Macs."

In a sleepy and picturesque New England town with a population of about 6000 residents and 6000 college students, there are now some 3000 Macs. Out in the central quad, dozens of Frisbees were soaring back and forth, and everywhere students in shorts were lounging in the sun. I had come to Dartmouth looking for a new, Macintosh-age student. Maybe I was expecting students to have Macs slung over their shoulders or to be sunbathing beside portable generators with their computers whirring madly. Or maybe I assumed that in every dining hall line there would be talk of the latest Mac software or of new tips and techniques discovered. Well, I was wrong.

"What do you think I am," asked Paul Cassella, a 19-year-old sophomore, when I asked him if he spent a lot of time with his Mac, "a dweeb or something?"

I was wandering through the dormitories early in the evening, poking my head into open doors and talking to anyone who had a Mac. But something seemed amiss. It wasn't the lack of second disk drives or the overwhelming prevalence of 128K, rather than 512K, Macs–those were purely economic considerations. No, it was the look in people's eyes when I first asked them what they thought of the Mac. The look seemed to say, "Why in the world are you interested in that?"

Cassella was no different. He and his roommate, Robert Victor, occupied a suite of rooms piled high with the detritus of any self-respecting college student.

When I glimpsed two Macintoshes sitting on a pair of cluttered desks, I figured I'd come to the right place. "Only the real geeks spend all their time with their Macs," Cassella continued, elaborating on the meaning of *dweeb*. "You'd be more likely to catch me having a few beers at my fraternity. Sure the Mac's better than a typewriter, but I don't think much about it anymore . . . at least not any more than I think about the telephone."

The telephone–that was it, the perfect analogy to explain the students' reactions to my questions. Wouldn't you be a little nonplussed if someone asked how you felt about the touch-tone phone? As I strolled along the corridors and chatted with students, it became clear that having a Mac was no big deal to most of the Dartmouth student body. Instead of being a source of wonder, the Mac had become a utility, something to use when you need to, like a washing machine or a refrigerator.

DartNet

Part of the reason Dartmouth students have taken to the Macintosh is the DartNet communications network. Every dorm room has been wired to give each student 24-hour access to the DartNet Timeshare mainframe system. According to Bill Arms, the school's vice-provost for computing, "Dartmouth's goal was to provide a computer that could work either as a personal computer for word processing, graphics, and writing small programs or as a terminal capable of using all of our timesharing systems. In addition, all the general services you get on a good university computing system are available, including electronic mail, file transfer, on-line information searches, and access to a variety of commercial and nonprofit nationwide networks."

Dartmouth's on-line catalog for its library, for example, can be searched from the privacy of a dorm room, not just from terminals in the library. Even more impressive is that the electronic catalog has added a new dimension to searching for a book or a reference. While you'd be unlikely to browse extensively through a traditional card catalog for cross-references, doing a search electronically allows you to display all the titles from any part of the catalog that match the search criteria. The process of using the on-line catalog has become a learning experience in itself because students can follow chains of information they never would have discovered doing traditional card-catalog research.

But no matter how interesting this library searching might be in the grand scheme of university knowledge acquisition, the most active area of DartNet is an unexpected little corner that was added almost as an afterthought–an afterthought that sociologists may study in the future for the clues it provides into group behavior. Enigmatically called "x,y,z," the addendum to DartNet is a CB-style open "microphone." Hidden beneath the public stream of messages that cross x,y,z 24 hours a day is a communications channel of private conversations.

I expected to find enclaves of Dartmouth students holed up in dorm rooms, eschewing traditional collegiate delights in favor of the dubious pleasures of anonymous conversation on the private x,y,z channel. But no one was willing to own up to listening in on the private channel. After a few seconds of watching the scatological, obscene, and generally sophomoric comments go whirling by, I understood why. The rudeness and aggression displayed in the messages were overwhelming.

I was about to give up on finding any redeeming social value on the channel and had just about given up on my quest to locate the quintessential Macintosh student as well, when I walked into Pauline Garris's dorm room. Garris, an 18-year-old freshman, was in front of her Mac watching the messages on the x,y,z channel

Government student Paula Zagrecki taught herself how to use a dorm mate's Mac and then taught all the other students on her floor. She writes all her letters and papers on the Mac, and last year she and her beau in New York kept in touch over DartNet instead of the long-distance phone lines.

slowly scroll by while she carried on a conversation with another freshman who was sitting there in person. I asked if she was arranging a date for the weekend.

"Well, actually," she explained, her voice dripping with Dartmouth's version of Valley Girl sarcasm, "noooooooo. I'm waiting for this guy I'm doing a paper with to get back to his room and log on again. See, that's how we've been working on it, over x,y,z."

As we talked, she returned to the DartNet x,y,z channel. Messages were scrolling by on the screen. I asked if she'd ever met anyone through x,y,z. Her laughter filled the room.

"Well, I've met a few guys that way. You know, you set up an appointment, and if you don't like the look of him, you just walk on by. And since all of us use false names anyway, he'll never know who you are."

Courseware

Dartmouth has a reputation as the home of pioneers in the development of software as well as computer networks. In the early 1960s, Dartmouth professors John Kemeney and Tom Kurtz produced the programming language BASIC. By the end of the Mac's freshman year, more than ten courses had added Macintosh courseware. Each program was created by a team consisting of a professor, who had the idea, and a programmer provided by the college. Programmers were supported by grants from the Sloane Group, the Pew Memorial Trust, and the Koch Foundation.

The results are impressive. For instance, a program called *Venn,* for an introductory philosophy course, provides practice with sentence inference, logic, and syllogisms. A chemistry course uses *Orbital Mixing,* a program that vividly shows the shapes of molecules in terms of the relative electromagnetic pulls of their component atoms. English, Spanish, and German courses use a simple drill program that is easy for nonprogramming faculty to generate. The bilingual courseware directs students to type replacements for highlighted phrases, clauses, prepositions, or anything else on which the instructor wants to concentrate. Social statistics courses use a statistics package that is tied to a series of data sets routinely used for Dartmouth's introductory courses. A few clicks of the mouse can alter combinations of several variables or types of statistical analysis, so that a student can quickly–and graphically–test the effects of statistical manipulations.

And the finishing touches are being applied to a program called *Atlas,* which has possibilities for a variety of courses. *Atlas* lets you create various maps by superimposing on a base map overlays showing information such as the locations of rivers, capital cities, or battle scenes. *Atlas* provides exercises in which students make their own maps and then compare them to the program's versions. But the word *map* is slightly misleading. In addition to a demonstration version utilizing a map of Europe, one of the applications is designed for biology classes. In that application *Atlas* uses overlays to help students understand the structure of cells. *Atlas* is a program reminiscent of *Filevision* but without the latter's database entry capability. It's a perfect example of the difference between commercial software and courseware. Most educational software is tailored for a course that lasts three months, not for the years of productivity that a commercial program is expected to satisfy.

Dartmouth has long been the home of software pioneers. Professor John Kemeny devised BASIC there with colleague Tom Kurtz. In the 1960s the two developed the first university time-sharing system.

Two introductory music programs, *Appletones* and *Mozart,* were created by Dartmouth professor John Appleton, who was one of the developers of the

Dartmouth professor John Appleton collaborated on the development of the respected SynClavier music synthesizer. Since the Mac arrived on campus, Appleton has created two introductory music programs that provide students with insight into the structure of musical compositions.

SynClavier music synthesizer, still the Rolls Royce of computer-assisted musical instruments. Appleton designed the music programs for students with no background in music theory to provide insight into the basic building blocks of composition. "Where the Macintosh has really revolutionized the electronic music field," explained Appleton, "is that it doesn't require programs with letter-perfect statements followed by a semicolon, no space, and a peculiar command.

"The Macintosh does everything graphically, and it is simply idiot-proof, which doesn't mean you can't do some very sophisticated things with it. The field of computers in music has been dominated by computer experts, computer programmers who love music, rather than by musicians who need to learn how to use computers.

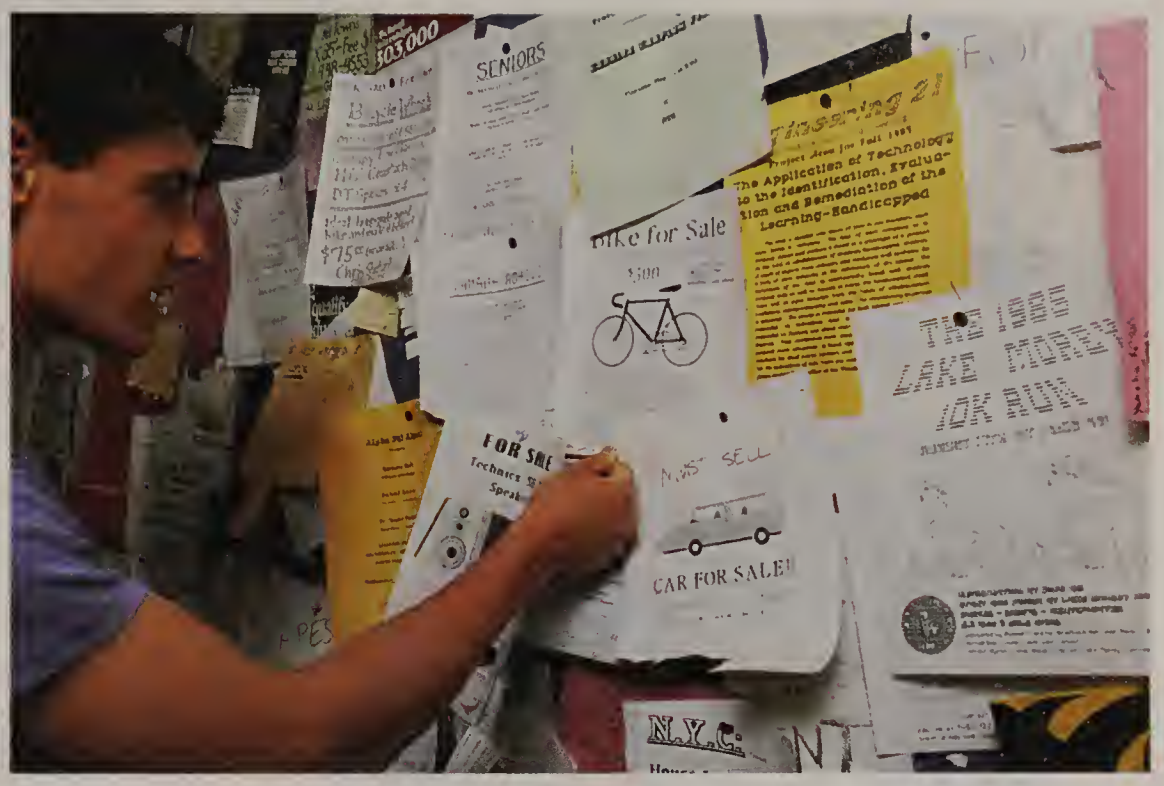
"And I think within a year or so you'll see really sophisticated musical products that hook up to a Mac, such as a keyboard instrument that memorizes what you play, displays it in music notation, has a powerful editing capability, and provides at least 16 distinct voices for playback. An instrument with that capability and a decent keyboard could become a standard musical instrument in homes in the same way that the Hammond organ was 40 years ago."

Granted, the courseware programs have limited scope because they originated to accompany specific courses. But is there commercial value to all this creativity? "Is that an appropriate role for a university?" responds Bill Arms.

"I'm not sure the university wants to get involved in all the details necessary to sell the programs," Arms says. "It was one of the big topics of discussion at a recent consortium meeting.

"Dartmouth made the decision years ago to allow BASIC to be used by anyone who wanted it, without licensing fees or any other restrictions. I think that was the proper idea. Ideally, universities are places of free exchange of information and knowledge, and the consortium is meant to be an extension of that concept. How does that fit with selling courseware?"

Despite the academic debate, courseware has spawned a pair of projects, headed by professors from Dartmouth but without official university ties, that are clearly for-profit ventures. One is Kemeney and Kurtz's new version of BASIC, called True BASIC, which was developed and marketed by their company. Another professor, Barry Richmond of the Resource Policy Center at Dartmouth, is developing a sophisticated modeling and forecasting tool for the Macintosh called Stella. Though Dartmouth has not been interested in marketing its courseware, both Brown University and Reed College have already sent products to market. Brown markets its courseware directly, through its Institute for Research, Information, and Scholarship. Reed, on the other hand, licensed an outside marketing firm to distribute both software and hardware developed on campus.



The community Imagewriters installed in each dorm at Dartmouth have led to a proliferation of Mac flyers on campus. Macintosh graphics stand out on the thickly papered bulletin board at Dartmouth's Hopkins Center. Here, student Ed Merrons double checks the bike-for-sale notice he created on the Mac.

The Ivy League Macintosh

The impact of the Macintosh at Dartmouth has been major but, in many important ways, invisible. Professors told me that the quality of students' writing improved dramatically with the advent of word processing. Students added that faculty have no qualms about making them rewrite their papers repeatedly. Courseware is in everyone's pocket, and the collegiate community is linked by the electronic social web. Mac flyers paper campus bulletin boards, and community Imagewriters spew out documents in the basement of every dorm.

The presence of the Macintosh at Dartmouth is a deep current flowing under the calm surface of the Ivy League school. In the end, as I wheeled my mind out of town, I was left with the impression that the Macintosh has blended completely into the Dartmouth environment. □

Jeffrey S. Young is a Contributing Editor of Macworld.

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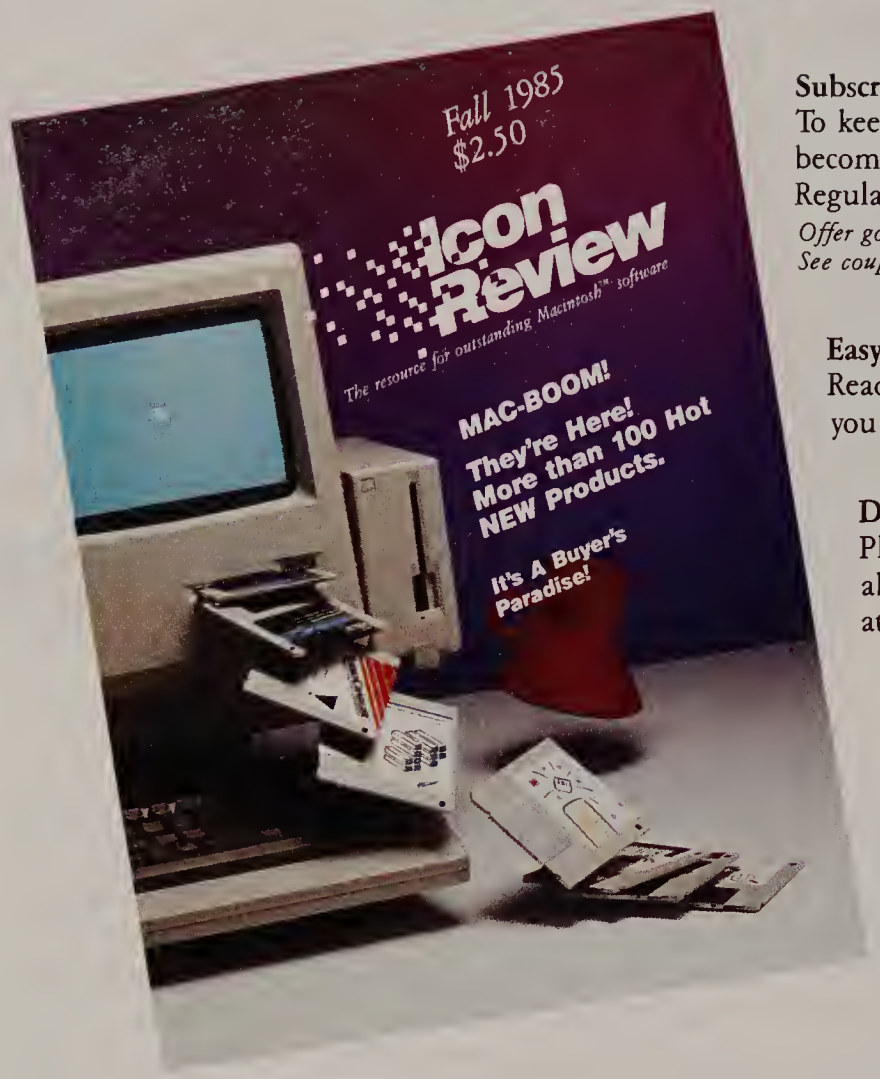

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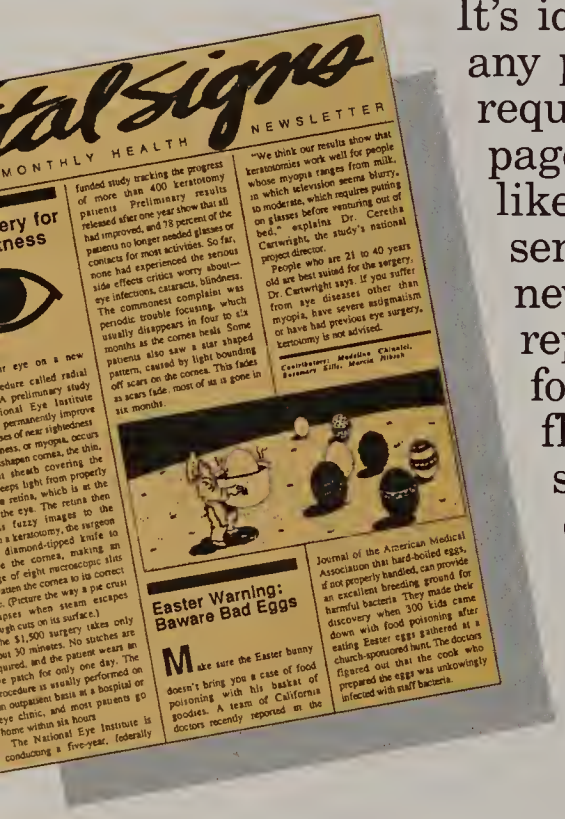

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Macware Reviews

Programs that let you assign keyboard shortcuts, exercise your brain, create icons, amass a fortune, strain your vocabulary, and organize your software

Edited by Erfert Nielson

A Chain of Commands

Most Macintosh programs give the mouse a workout. You frequently zip the pointer up to the menu bar, pull down a menu, and select a command or a formatting preference. Although selecting items from a menu saves you the trouble of remembering esoteric commands, it can slow you down. Shortcuts such as ⌘-X for Cut and ⌘-C for Copy are available in many programs, but additional shortcuts such as ⌘-S for Save or ⌘-Q for Quit would come in handy.

With ***Mac Tracks,*** a desk accessory from Assimilation, you can assign your own ⌘-key combination to any menu choice. Moreover, you can assign a ⌘-key combination to mouse movements, to a sequence of keystrokes, or to a combination of mouse and keyboard activity. Mac Tracks records an action or a series of actions and associates the recorded information with the keystroke combination you choose. Later, when you press that keystroke combination—⌘-Q for Quit, for example—Mac Tracks repeats the activity you recorded.

The keystroke combination must include the ⌘ key and one of the letter, number, or punctuation keys, and it may involve the Option and Shift keys. The Return, Enter, Tab, and Backspace keys and the numeric keypad's arrow keys can't be used.

Each application program on a disk has a separate set of shortcuts, which means that you could define ⌘-R differently in *MacWrite, MacTerminal,* and the Finder. Because the shortcuts work only in the application in which you record them, you must rerecord a shortcut if you want to use it in other applications. You can't use Copy and Paste to transfer shortcuts from one application to another.

Making Tracks

Mac Tracks is easy to install; you drag the Install Mac Tracks icon onto an application disk, and Mac Tracks joins the disk's other desk accessories. To record a command sequence, you choose Mac Tracks from the Apple menu and click Record a Key in the dialog box that appears. You then press the combination of keys that you want to trigger the command sequence, and you type a brief description of the action you are about to record. Next, you carry out whatever operation you want to record: type, choose from menus, make selections in dialog boxes, and so forth. Normally, the activity you record happens while you record it, but Mac Tracks also allows you to "record without doing." For example, you could record choosing Quit from the File menu without actually quitting the application program at the time. The feature is handy, though it can be a bit confusing because menu choices aren't highlighted and typing isn't displayed.

Providing shortcuts for menu options is an obvious use of Mac Tracks, but as you use the desk accessory, you start to think of more complex uses. For example, if you generally set up your *MacWrite* documents to be double-spaced, 9-point New York with a tab stop at the 2-inch mark and another at the 5-inch mark, you can use Mac Tracks to record the entire formatting sequence and assign it a ⌘-key shortcut, say ⌘-F for Format. The next time you

(continues on page 132)

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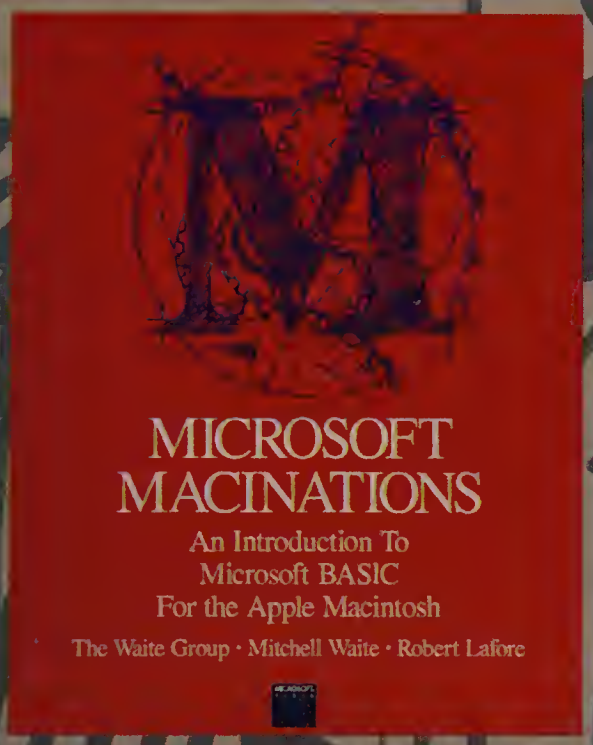

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(continued from page 129)

open a new *MacWrite* document on that disk, you press ⌘-F, and the format automatically conforms to the settings you selected earlier. You could also use Mac Tracks with *MacTerminal* or another communications program to enter your CompuServe account number and password.

A Library of Shortcuts

If you forget which keystroke combination invokes a particular recording, you can look it up using *Mac Tracks'* library feature (see "Command Library"). The library displays a list of the shortcuts for the current program, arranged alphabetically by key or description. You can delete a recording, edit its description, or change the keystroke associated with it. However, you can't print a list of your shortcuts, except with the Macintosh's ⌘-Shift-4 print screen feature.

Installing the Mac Tracks desk accessory enlarges the System file by 16K. A single Mac Tracks document stores the shortcuts you record for all applications on the disk. The document requires 1K or more of disk space, depending on the number and complexity of your shortcuts.

To save disk space Mac Tracks normally records mouse clicks but not mouse movement, which is adequate for menu and dialog box activity. For recording mouse movement while drawing in *MacPaint, MacDraw, Filevision,* or similar applications, Mac Tracks has a freehand mode.

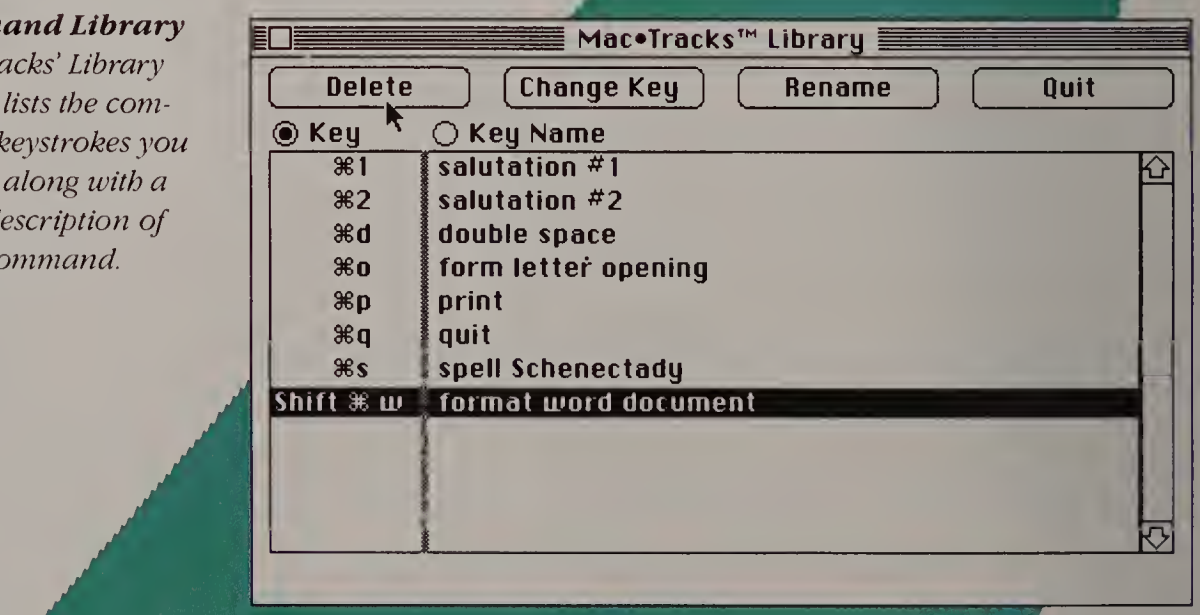
Mac Tracks seems fairly reliable, but it doesn't fit seamlessly with all applications. The screen doesn't always refresh properly after recording a shortcut. Immediately after starting an application program, I occasionally had to choose Mac Tracks from the Apple menu before any previously recorded shortcuts would work. A few times I had to press a keystroke combination twice before anything happened. In general, however, Mac Tracks works as it should.

People who like the Macintosh because its software requires less memorization of commands than the average personal computer program probably won't find much use for Mac Tracks. But if you want to automate lengthy procedures or cut down on mouse moving, you'll find Mac Tracks a worthwhile addition to your desk accessories.—*Lon Poole*

Mac Tracks 2.0
Assimilation, Inc.
485 Alberto Way
Los Gatos, CA 95030
800/622-5464, 800/421-0243 in California
List price: $29

(continues on page 135)

Command Library
Mac Tracks' Library option lists the command keystrokes you create, along with a short description of each command.



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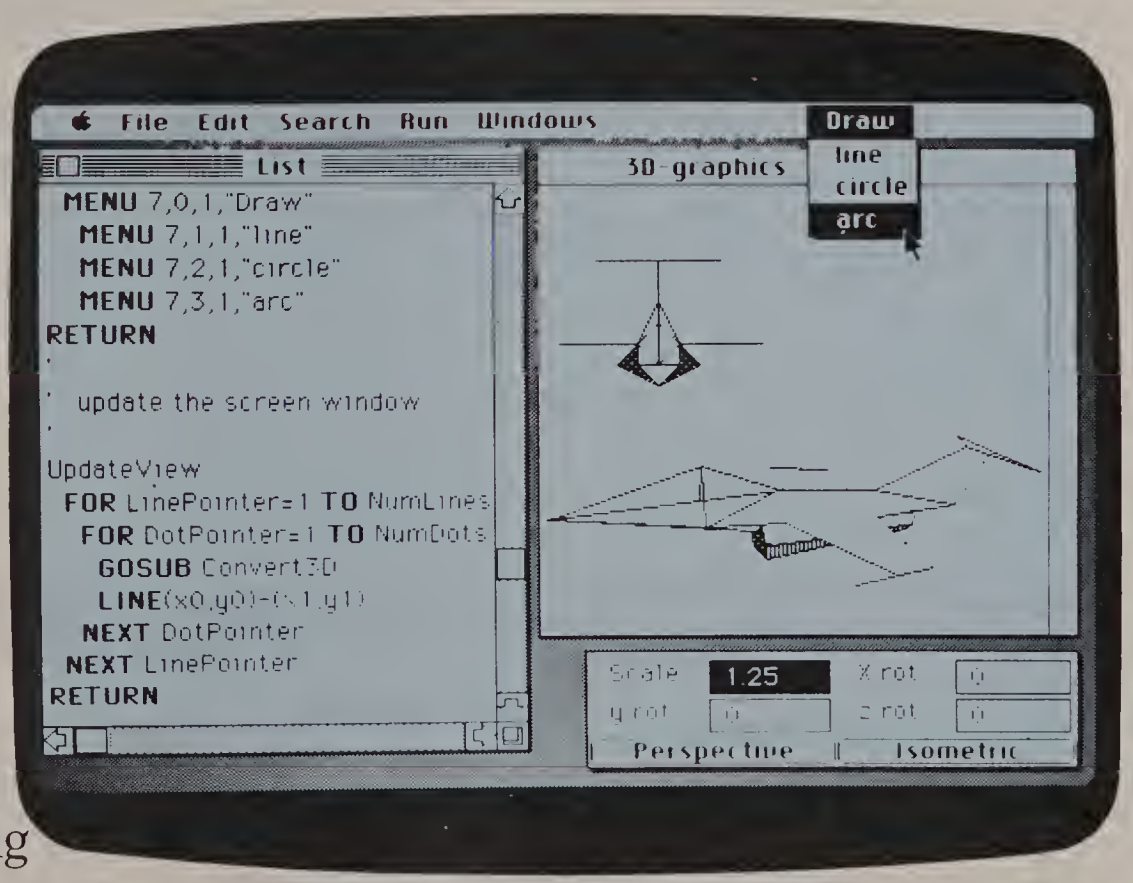

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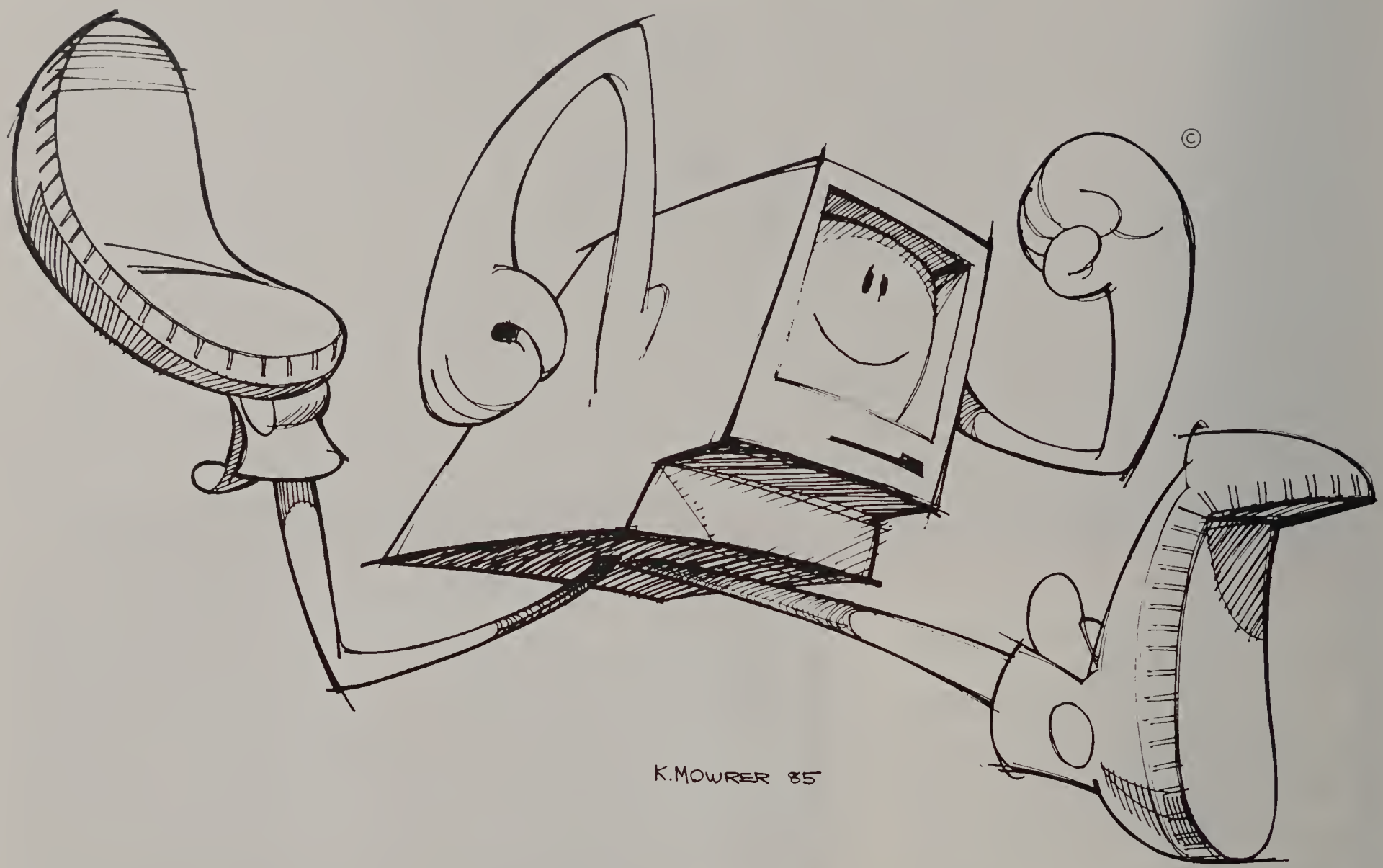

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(continued from page 132)

To Halve and Halve Not

Much has been made of how the Macintosh, with its graphics-oriented, mouse-based user interface, is the whole-brain computer, requiring the integrated use of both halves of the human brain. According to current theory, the right hemisphere of the brain processes patterns, wholes, the intuitive, and the artistic, while the left hemisphere processes sequences, details, the analytical, and the logical. A computer programmer might say that the right half is object-oriented and the left half procedure-oriented. It seemed inevitable that a software developer would promote one of its programs as a left-brain/right-brain educational game for the Macintosh, and the inevitable has happened: ***Think Fast*** has issued forth from Brainpower, the company that brought us the innovative *ChipWits*. *Think Fast* is billed as a memory training tool; its package claims that the program measures and improves short-term memory in both hemispheres of the brain.

Trial by Software

Think Fast alternates tasks, called trials, meant for the left half of the brain with trials for the right half. You can decide which type starts the session. Left-half trials feature sequences of letters or numbers, and right-half trials display patterns of squares. Each trial, which is timed, asks you to perform one of three operations: decide if two sequences or patterns are the same or different, copy a sequence or pattern while it is still on the screen, or recall a sequence or pattern after it has disappeared from the screen (see "Beat the Clock"). The trials become increasingly difficult as you prove your adeptness at one level and move on to the next. Occasionally, a sequence trial interrupts a pattern trial and vice versa.

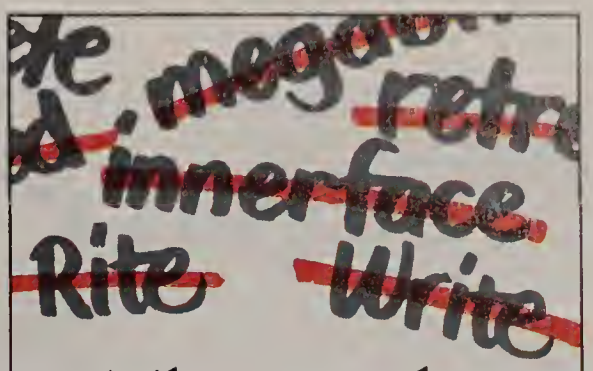
Before you start a *Think Fast* session, you can set speed, difficulty, and risk variables that determine how much time you have for each task, how hard the tasks become, and how many points you gain or lose for each. The variables help determine your final score. You can also set the number of trials that make up a session.

Because Brainpower designed *Think Fast* as an analytic tool, the program provides summary and full reports of each session, broken down according to difficulty level and left-half or right-half trials. It falls short in its analysis, however. A session report indicates only how many of the trials in each difficulty level you answered correctly, answered incorrectly, or failed to answer for lack of time. It also indicates whether you were moved to a higher or lower level as a result. The report does not show what a trial consisted of or how you were wrong.

The session report does show the highest level of difficulty you reached in each type of trial but does not indicate

(continues on page 138)

Beat the Clock
Time trials in Think Fast *alternate between tasks for the right half of the brain (patterns of squares) and tasks for the left half (sequences of letters or numbers). You compare, copy, or recall the patterns or sequences before time runs out.*



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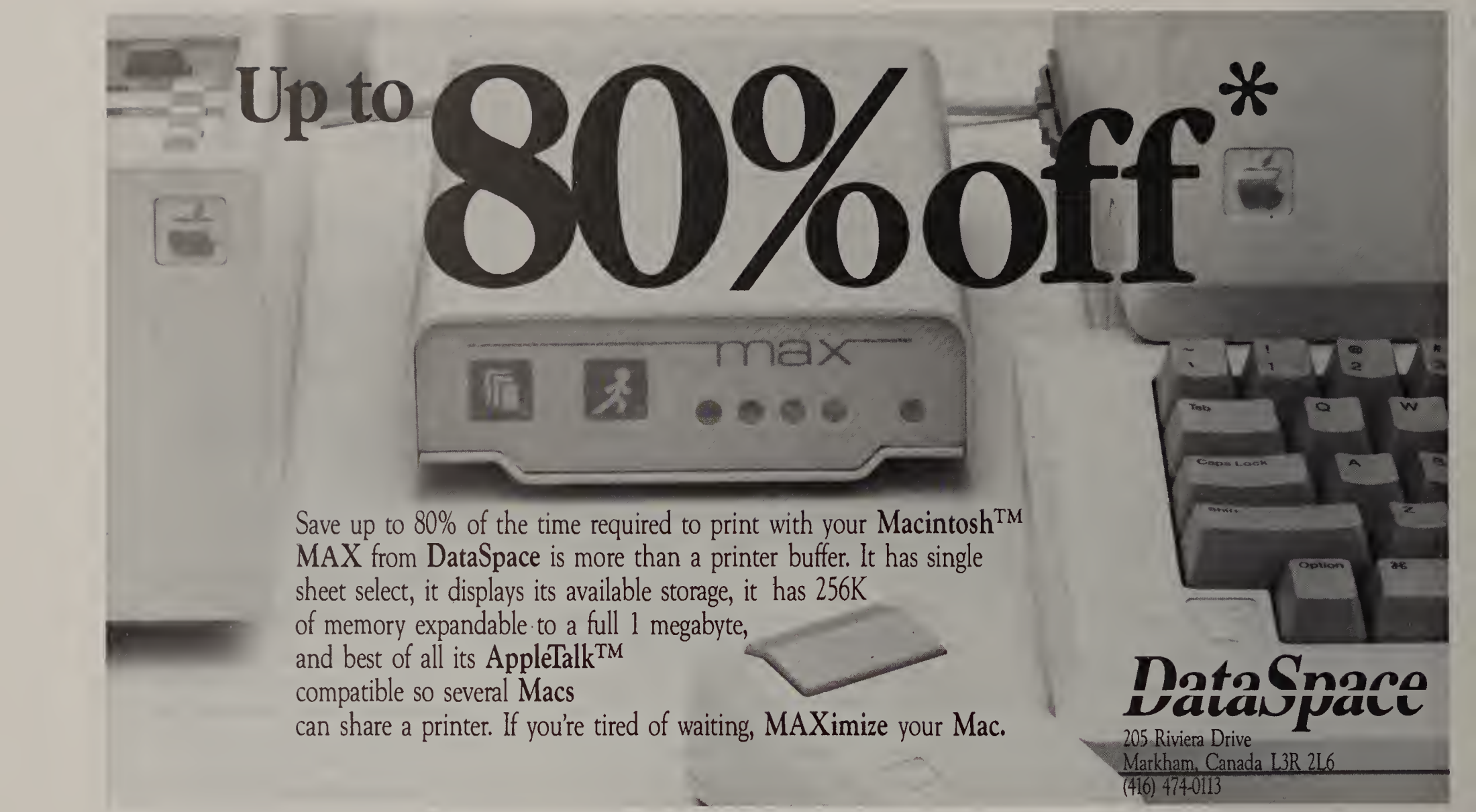

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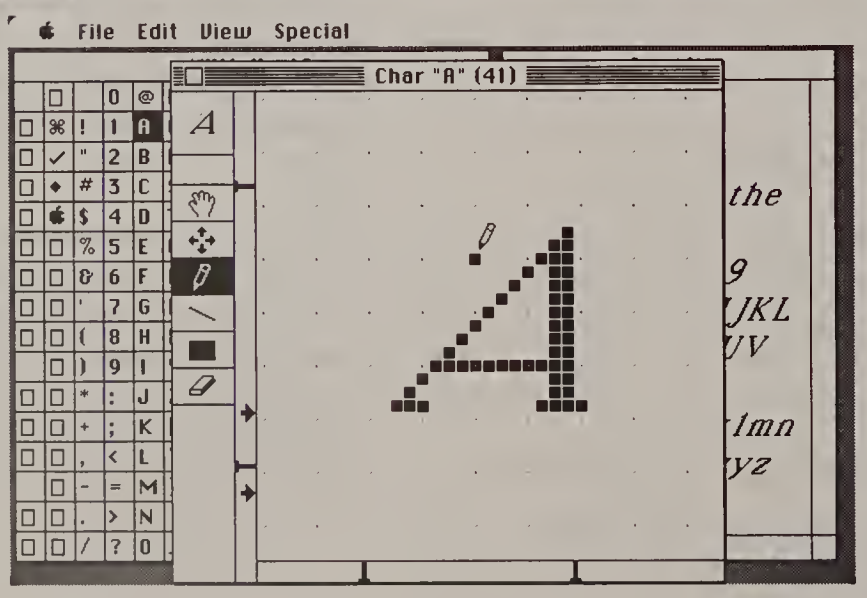

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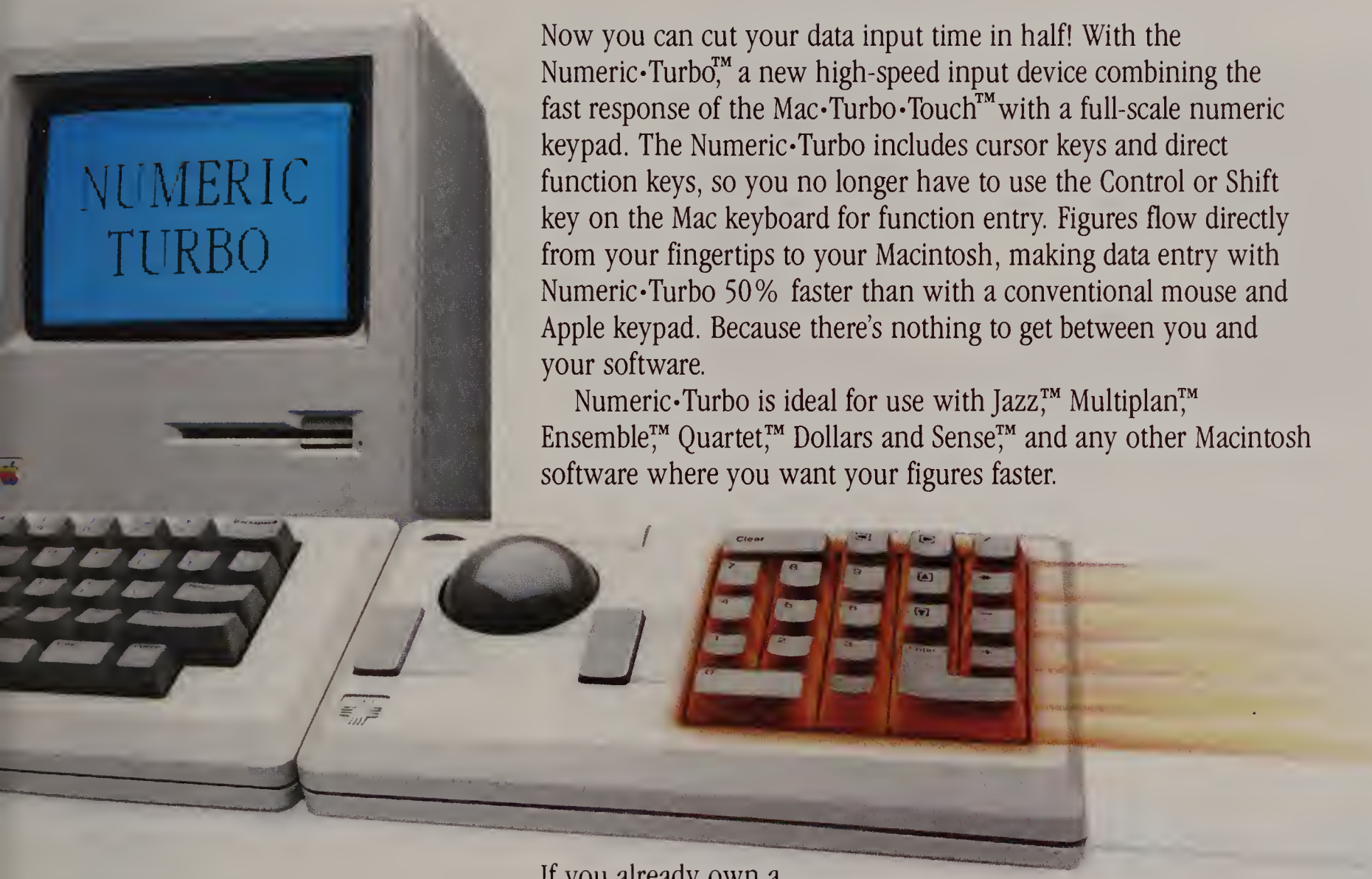

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(continued from page 135)

whether the difference between the two levels is significant. Don't expect *Think Fast* to determine the degree to which one hemisphere of your brain dominates the other or even if one is dominant at all. If anything, the program can only tell you what you probably already know or at least suspect about yourself: whether you're analytical or intuitive, verbal or visual, or a little of both.

Click Quick

I question whether practicing with *Think Fast* will improve your left-brain/right-brain skills. You may just improve your performance in *Think Fast*. The trouble with the program is that no matter how well either side of your brain is working, you need a good deal of coordination to type or click the answers within the time limit. When you compare two patterns or sequences, you use the mouse to click either the Same or Different button. When you copy or recall, you type letters or numbers to form a sequence but click squares on the screen to form a pattern. Switching from one task to the other, from one input device to the other, can be confusing. Part of your time is used up deciding which task you are being asked to perform and whether you should use the mouse or the keyboard.

I didn't find *Think Fast* any fun as a game, although people who like timed tests might enjoy it. Its validity as a tool to measure and improve memory is dubious. The documentation contains an academic discussion of how the brain processes stimuli and forms memory, but at best the program itself probably does no more than help you remember random patterns and sequences of letters or numbers. I recommend that you think long and hard before you think fast.—*Sharon Zardetto Aker*

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Brainpower
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(continues on page 140)

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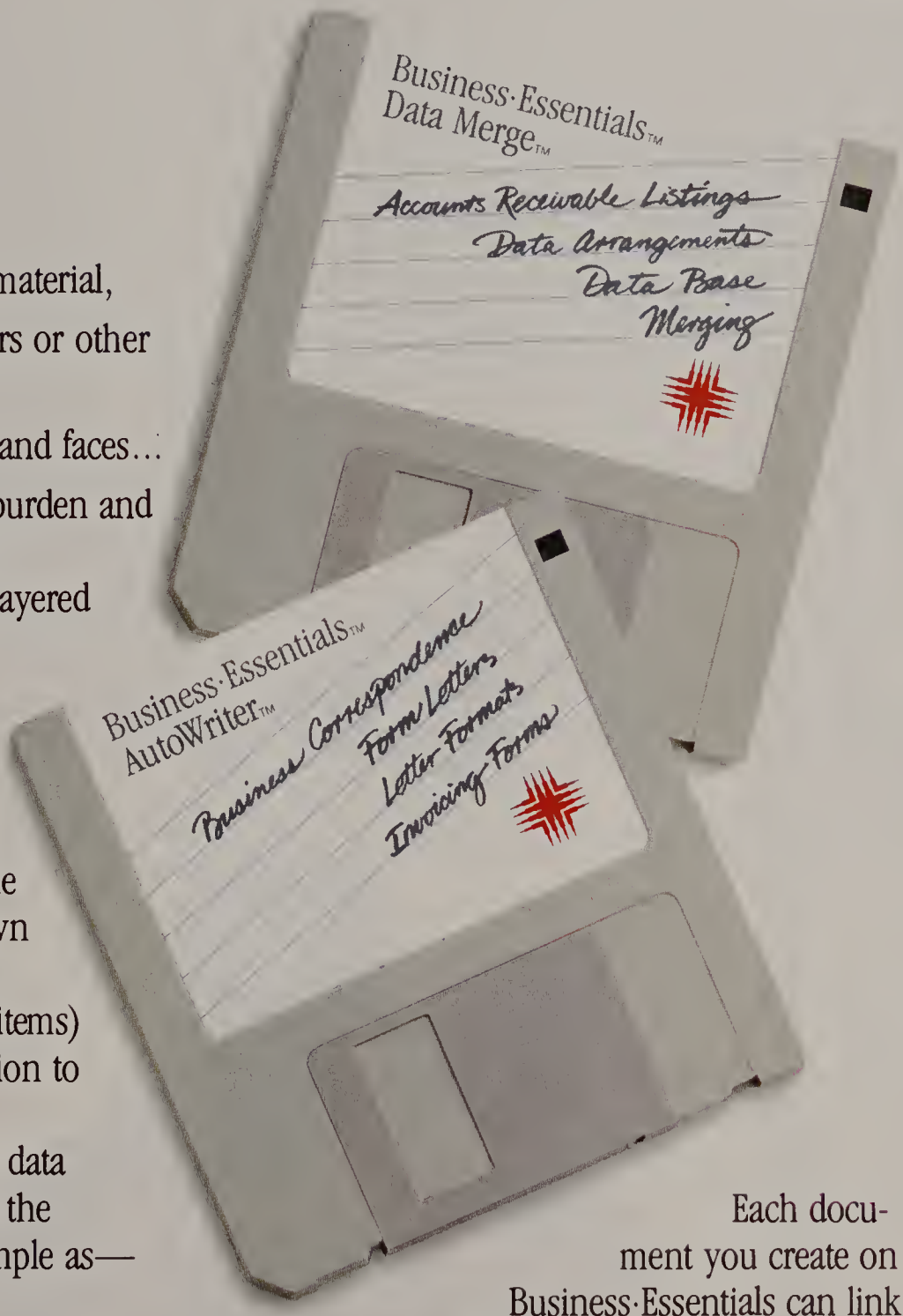

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Business·Essentials is a double layered program which combines *word processing* and *data management*. Business·Essentials comes with a set of standard business letters and forms.

The word processing aspect of the program also lets you create your own letters, documents or reports.

The data manager (16 fields x 600 items) provides an integrated merge function to your letter or document.

Integrating information into the data base from your document or from the document to the data base is as simple as—point…click…merge!

For example, if you are writing letters to your customers, you can merge the letters with your data base of names and addresses. The program queues the letter, selects for printing and formats the names and addresses and any other pertinent information you have listed. The program automatically sequences the next name from letter to letter.

Each document you create on Business·Essentials can link with the data base. Documents as well as the data base can be rearranged, formatted or merged with uncommon speed.

Increase your productivity on your Macintosh™ with the power, ease and speed of Business·Essentials. You'll love how little it takes to accomplish a lot.

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Circle 265 on reader service card

(continued from page 138)

Out with Old Icons!

Tired of the same old icons? ***Icon Switcher,*** from PBI Software, lets you add a personal touch to the Macintosh desktop by installing your own icons. You can draw an icon in *MacPaint* and transfer it to *Icon Switcher* via the Scrapbook, use *Icon Switcher*'s editor to create new icons or modify existing ones, or use the program to swap one icon for another.

Macintosh Iconography

As *Icon Switcher*'s documentation explains, there are three types of Macintosh icons: application icons, such as those representing *MacWrite* or *MacPaint;* document icons, which depict files or documents created with a particular application; and picture icons, which appear in applications rather than on the desktop (for example, the picture of Bill Atkinson that appears when you select About MacPaint is a picture icon). *Icon Switcher* lets you modify any of those icons.

An icon must fit into a space measuring 32 by 32 pixels. If you create a larger icon, *Icon Switcher* automatically shrinks it to fit in a 32- by 32-pixel square. *MacPaint*'s FatBits allows you to draw pixel by pixel, making it easy for you to keep icons the right size. The *Icon Switcher* Scrapbook includes a selection of 20 prefabricated icons–most of them pictures from commercial clip-art disks–but I found those icons to be useless. For one thing, if you're going to customize your desktop, you probably want to design your own icons or at least choose your own clip-art pictures. Also, most of the images provided in the Scrapbook are relatively large. When *Icon Switcher* shrinks the pictures to fit in the 32- by 32-pixel format, they are distorted and have lost most of their detail. I suggest drawing or choosing pictures that are close to an icon's actual size.

A tutorial shows how to replace an application icon, replace a document icon, and switch one application icon with another. The procedure for replacing an application icon takes 14 steps, all of which involve clicking buttons or selecting menu items. You switch or edit icons in three windows. The Scrapbook Access window scales pictures stored in the Scrapbook to the proper size and allows you to save them as icons. The Switch Options window lets you delete an icon and replace it with another. This window also allows you to save a copy of an icon for later use, which is handy if you decide to switch back to an

(continues on page 144)

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You wouldn't put just anything into your personal scrapbook..
So why not make your Macintosh™ scrapbook come alive with the fine graphics of Paste-Ease™?

Unlike other graphics packages, Paste-Ease™ provides you with a vast library of artistic building blocks. By using the hundreds of graphics pieces provided to you, along with your MacPaint™ program, you can paste together your own creative ideas. Paste-Ease™ comes complete with a user's manual which features an entire section dedicated to creative hints.

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Let's get one thing straight. MacTablet is *not* one of those kiddie pads. It's a serious digitizer. Like the ones we've designed for professional six-figure graphics systems since 1972.

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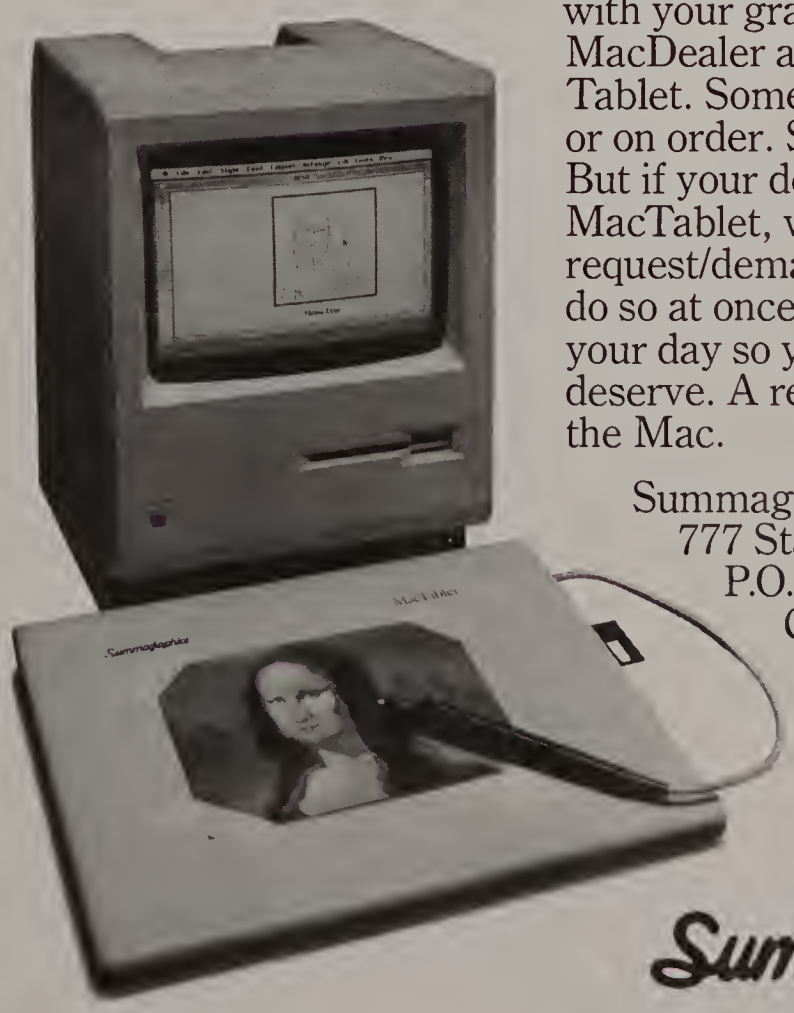

If you're ready to stop mousing around with your graphics, go to your MacDealer and ask for MacTablet. Some will have it in stock or on order. So much the better. But if your dealer doesn't carry MacTablet, we encourage you to request/demand/beg that he/she do so at once. Tell 'em to Mac your day so you can get what you deserve. A really good pad on the Mac.

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Now there's a Mouse that flies.

Introducing the View Control System.™ Ultrasonic technology that moves your cursor at the speed of sight.

Your relationship with your Mac is about to change. Dramatically. Because now the View Control System (or VCS) from Personics™ gives you a powerful new way to control the cursor. Fast. Direct. Intuitive. It's the best thing since the Mouse. In fact, it's better.

View Control

The VCS uses a remarkable new technology for moving the cursor where you look on the screen. A lightweight headset translates subtle, natural head rotation into cursor movement commands. Look to the right and the cursor moves right. Look down and to the left and the cursor moves accordingly. Zip from corner to corner, or point to a tiny target with ease, even an individual pixel!

Look Ma, Both Hands!

Now you don't have to take your hand off the keyboard to reach for the Mouse. The VCS features a unique button pad which clips on your keyboard just below the space bar. One button activates the headset. Use the second button for clicking and dragging. The VCS gives you instant cursor control without forcing your hands off the home keys. No more reach, grab, roll, click, return.

Faster than a Speeding Mouse

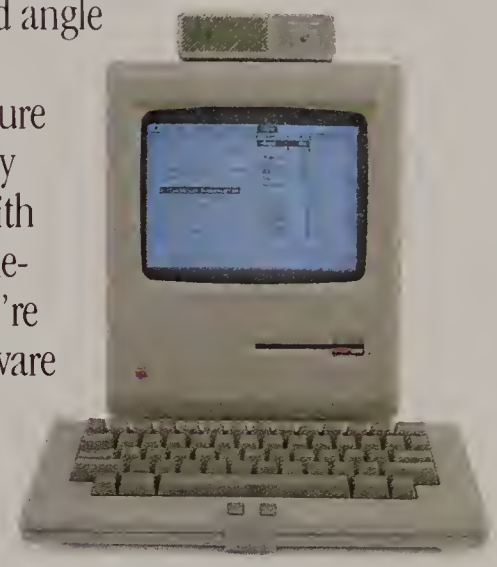
The VCS is accurate. Just like a mouse. But since you can look much faster than you can reach and roll, it gives you far greater speed. And because your hands stay on the keyboard you maintain continuity and concentration. For keystroke-intensive applications like word processing and spreadsheet, expect a real boost in productivity.

Reclaim Your Desktop

The VCS flies above the ordinary mouse, leaving more space on your desktop. Now you have room for books, papers and your favorite coffee cup. Of course, if you want your mouse within reach, there's no problem. You can connect your mouse and VCS to the Mac at the same time and use them interchangeably.

State-of-the-art-Technology

Personics has developed a proprietary ultrasonic technology for the VCS.* The headset receives an ultrasonic signal transmitted from the VCS Control Unit which sits on top of the Mac. Changes in the rotation and angle of the head are tracked and electronically translated into quadrature signals just like those produced by the Mouse. And the VCS works with any 128K or 512K Mac and off-the-shelf software. Plug it in and you're ready to go. No hardware or software modifications are required.



**Patent Pending.*
IBM PC and Apple II versions available soon.

Get Acquainted in 15 Minutes

The VCS is easy to use. Learning is fun and, before long, view control becomes almost second nature. You'll simply look and click. The VCS headset is comfortable, lightweight and adjustable. It accommodates eyeglasses and won't muss up your hair. And since the VCS headset doesn't rest on your ears, you're free to talk on the phone.

Just $199.00 and Easy To Order

The VCS is available right now, directly from Personics. Call us toll free. A member of our sales staff will be happy to answer your questions and provide additional information. If you're ready to order, please have your major credit card at hand when you call. All orders are processed immediately and shipped within 24 hours. And we back the VCS with a full one year limited warranty.

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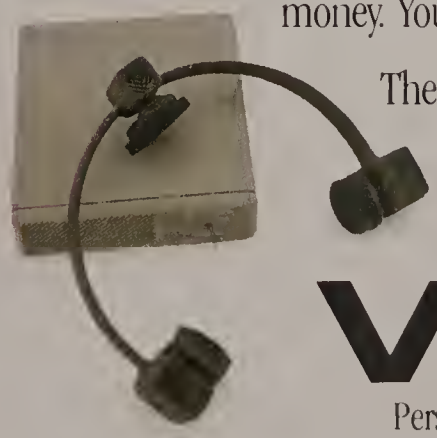
When your VCS arrives, try it for 30 days. If you are not completely satisfied, return it and we will swiftly refund your money. Your satisfaction is the only judge.



The VCS. A simple and direct link between man and computer. Try it, and watch your ideas take off.

VCS™

Personics Corporation
2352 Main Street, Concord, MA 01742

Circle 85 on reader service card

(continued from page 140)

original icon. The Manipulate Options window provides a FatBits-like editor that you can use to alter existing icons or draw new ones. In addition, this window lets you install or delete icons.

Myriad Options

Although the tutorial's instructions are relatively clear, the program can be intimidating because of the number of options available. You may find some of the buttons in the program's three windows confusing. For example, unless you read the documentation's appendix, you won't know that the Save Icon button in the Scrapbook Access window applies to picture icons, while the Save File Icon button refers to application and document icons. However, with a bit of experimentation you can find your way around the program and replace icons to your heart's content (see "Designer Icons").

A few points aren't stressed in the documentation. *Icon Switcher* lets you customize document icons, but keep in mind that a single picture represents all documents produced with a given application. For example, if you replace *MacPaint*'s document icon with a picture of an easel, all documents you create with *MacPaint* are represented by the easel icon on the desktop. You can't customize each *MacPaint* document icon. I found the picture on the back of *Icon Switcher*'s box misleading because the "before" screen shows 16 identical icons, and the "after" screen shows them replaced by 12 different icons. In reality, you probably wouldn't have more than a few types of documents on a single disk.

Don't be surprised when you drag a customized document icon onto another disk and it reverts to its original form. Application icons, however, can be transferred from one disk to another.

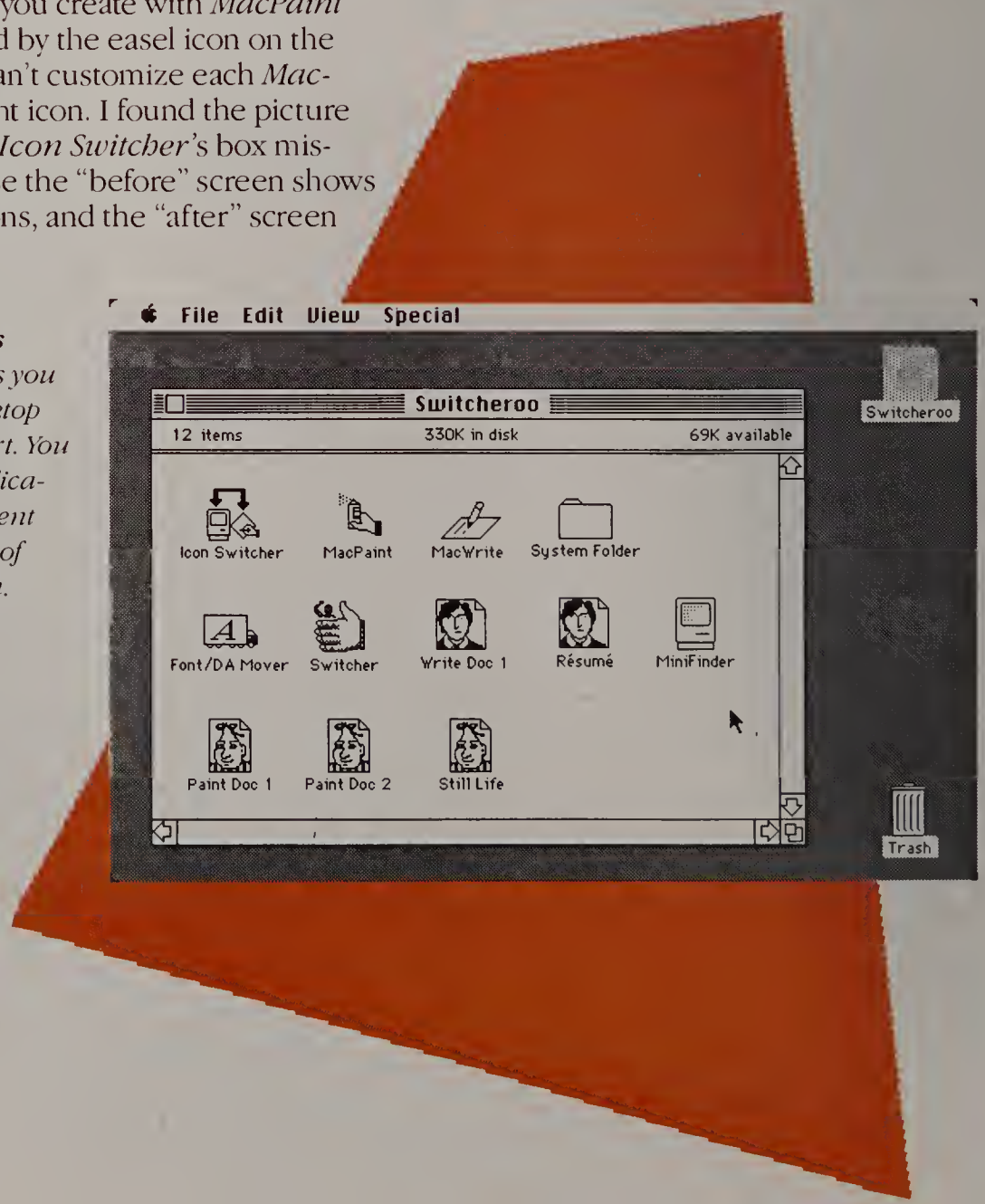
A final tip: when you transfer *MacPaint* drawings to the Scrapbook to make them into icons, copy or cut them with the lasso instead of the selection rectangle. Drawings transferred with the selection rectangle become distorted because the entire space selected by the rectangle is transferred.

As far as I can see, *Icon Switcher* has no practical use whatsoever. For that reason I recommend that you go out and buy a copy. It never hurts to have a little fun.
—Erfert Nielson

Icon Switcher
PBI Software
1155B-H Chess Dr.
Foster City, CA 94404
415/349-8765
List price: $19.99

(continues on page 147)

Designer Icons
Icon Switcher *lets you turn a drab desktop into a work of art. You can replace application and document icons with those of your own design.*



Ho, ho, ho! Now you won't miss deadlines.

The Date Calculator is one neat desk accessory. Working off the menu, it calculates dates *according to parameters set by you.* It can give you the number of working days between a start date and an end date, or the date and day of the week X working days from now.

For instance, Mr. Claus calls to say he needs forty thousand dozen fancy red bows by December 20, can you do it and how much? You say hold on a minute and, with a few flicks of the mouse, deduct all Saturdays and Sundays, plus Columbus Day and Thanksgiving, to come up with 55 working days between now and then. Your vast experience, not to mention gut-feel, tells you that 61 working days are needed for that many red bows, so you figure in six days' overtime for ten elves, say no problem and here's the dollars and cents, and Santa says ho ho, you've got a deal.

As we said, the Date Calculator is neat—and at a mere $39.95 could pay for itself in no time. To order, see the Model Office Company two-page advertisement in this issue of MacWorld.

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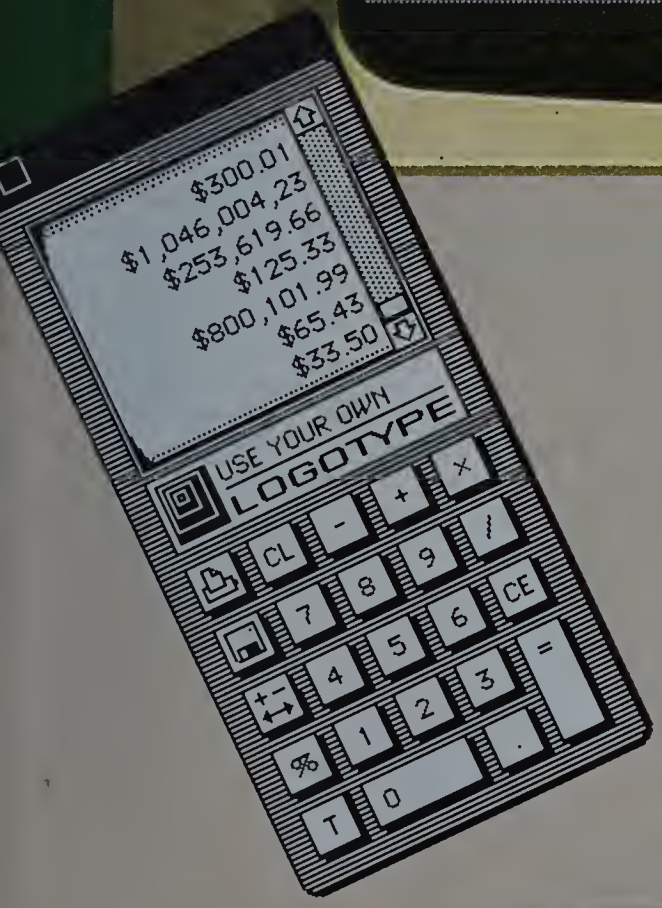

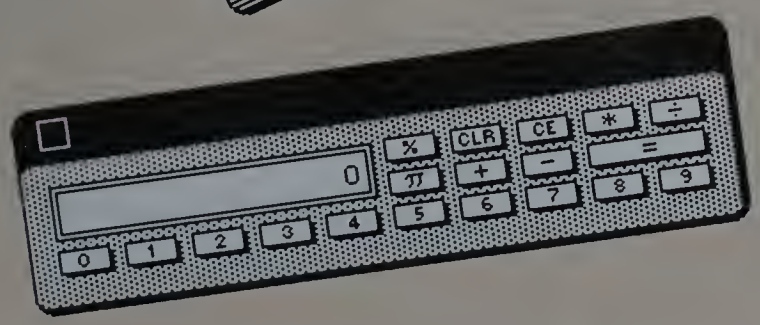

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Included are a host of mathematical, scientific, business, date/time, and conversion function keys. Or define your own programmable keys. The *CCS* parts box is loaded with assorted keys, switches, LEDs, clock/calendar displays—Even a resizeable, scrolling paper tape that prints to the *ImageWriter,* clipboard, or a *MacWrite™* text file. Onscreen calculator keys may be mapped to any alphanumeric keyboard or keypad key (as an alternative to using the mouse).

Customize your calculator's case using *MacPaint™* style tools for drawing, painting, erasing, fatbitting, filling, stretching, and typing text. You can even design your own custom cursor to use with your calculator. Calculators may be saved as workfiles (allowing future changes), *Font/Desk Accessory Mover* files, or as self-installing calculator files. Several sample calculators are included.

The Dubl-Click Calculator Construction Set.
Suggested retail: $99.

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MAXIMIZE YOUR MAC

Inside every Macintosh™ beats the heart of a superb machine, and the feats it can perform when given the room to maneuver will astound you. However, the sad fact is, most Mac's will never be allowed enough RAM to run the major integrated software packages wholly from memory - at lightning speed. Nor will they know the wonder of running eight applications essentially simultaneously in Switcher. Nor will they see giant spread sheets or documents. But yours can.

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(continued from page 144)

Takeover on Wiki-Wiki

The stock and trade of business simulation games is to teach you about the world of corporate finance. The games hone your business skills in a variety of hypothetical settings and provide some clever entertainment in the process.

Most business simulation games, such as Blue Chip's *Millionaire* (see *Macware Reviews, Macworld,* August 1985), provide you with the raw data–stock market quotes, commodity indexes, or real estate trends–that you use in making decisions. Scarborough Systems' ***Make Millions*** adds a new twist to the business simulation formula: it is a business adventure game. The game has an ostensible plot. Your father has called you back to your home on Wiki-Wiki Island to fight archrival Humungus, a conglomerate trying to control the island's industries. When you return to the island, your father is nowhere to be found. The solution to the riddle of your father's disappearance–and the reason you were called back to the island–is locked away in the office safe. Unfortunately, you cannot obtain the answer until you procure the five keys needed to open the safe, and the only way to get the keys is to gain a majority interest in the five companies that make up the Aloha Guitar empire.

At the beginning of the game, you have $250,000 in cash, earning interest at the treasury bill rate. You have to own at least 15,000 shares of each company (30 percent) to control its operations, and to get the company's key you must own 25,000 shares (50 percent).

The Chief's Office

The game starts out in your office, which overlooks the beach of Wiki-Wiki Island. On the wall is a calendar and a clock with a sliding bar at its bottom. You can speed up or slow down the game by moving the bar. Most information, including stock prices and company plans, changes on a weekly basis, so you have to make decisions based on the information before the week ends.

(continues on page 152)

NEW Macintosh Data Management Program from RGS

File & Report™

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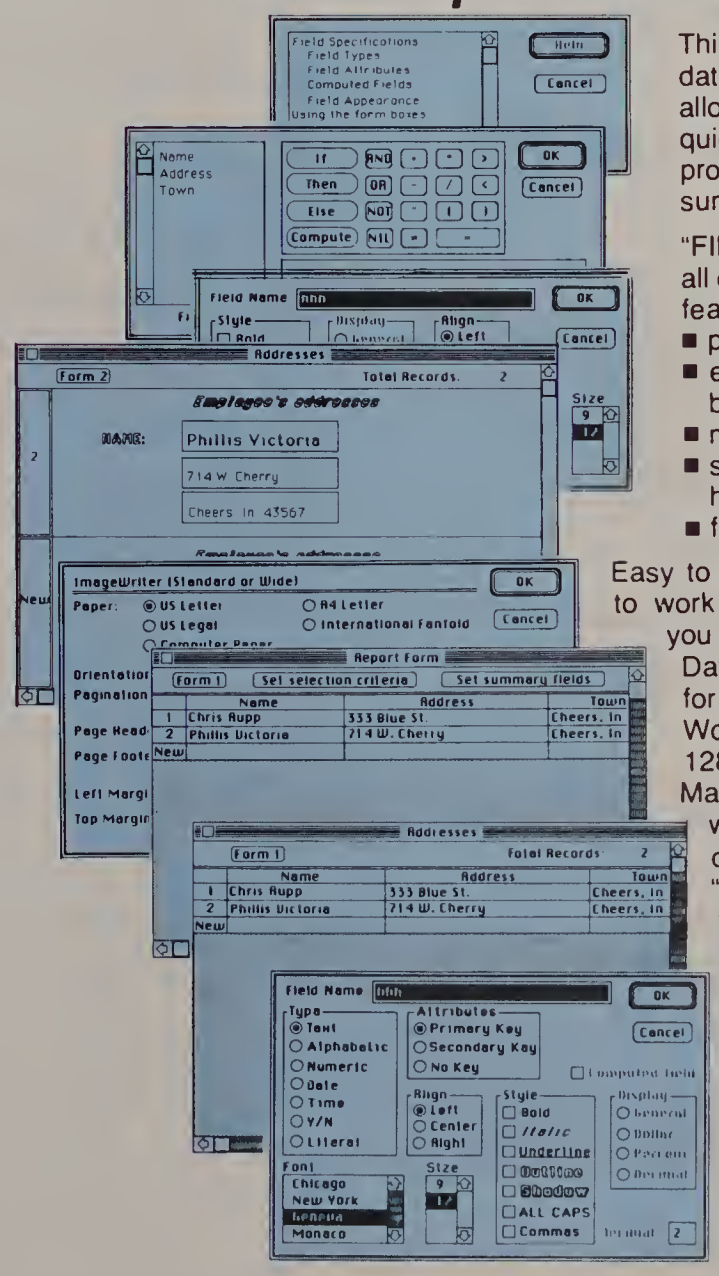

This new, tested and proven data management program allows the storage and very quick retrieval of data and the production of reports, lists and summaries using that data.

"FILE & REPORT"™ utilizes all of the standard Macintosh features including:

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Easy to use and very enjoyable to work with, yet delivers what you want and need from a Data Management Program for your Macintosh Computer. Works with Macintosh 128K and 512K or Macintosh XL. Compatible with all Macintosh hard disks. More than just "user-friendly", RGS "FILE & REPORT" is like a member of the family. Obtain all the facts at your computer dealer, or, if he doesn't know, send us his name or write direct for technical, illustrated and informative literature.

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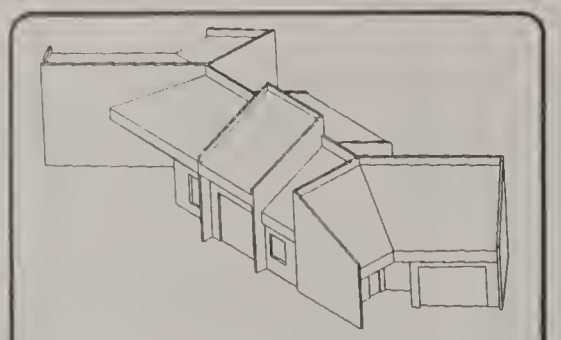

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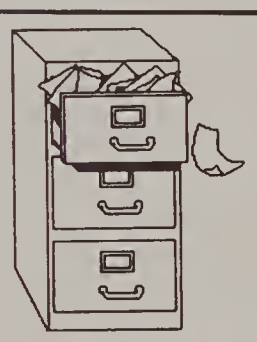

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Circle 97 on reader service card

(continued from page 147)

On the desk is a phone that rings almost constantly. To answer, you click on the phone while it is ringing. Early in the game, messages arrive from stockbrokers with hot tips. As you gain control of companies, you also hear from consultants, who offer to train your managers, and from the managers themselves, who ask advice and report on your companies' activities. The most important calls come from Manny the Mouth, the spy who reports on the activities of Humungus.

If you can't answer the phone, a message is taken on a "While You Were Out" form. Unfortunately, Manny the Mouth rarely leaves a message, and his phone number is unlisted.

The island's three-page newspaper, the *Island Business Gazette,* gives the weekly price fluctuations for all stocks on the island and provides data on important economic indicators such as the prime rate, the inflation rate, treasury bill interest, and the gross national product.

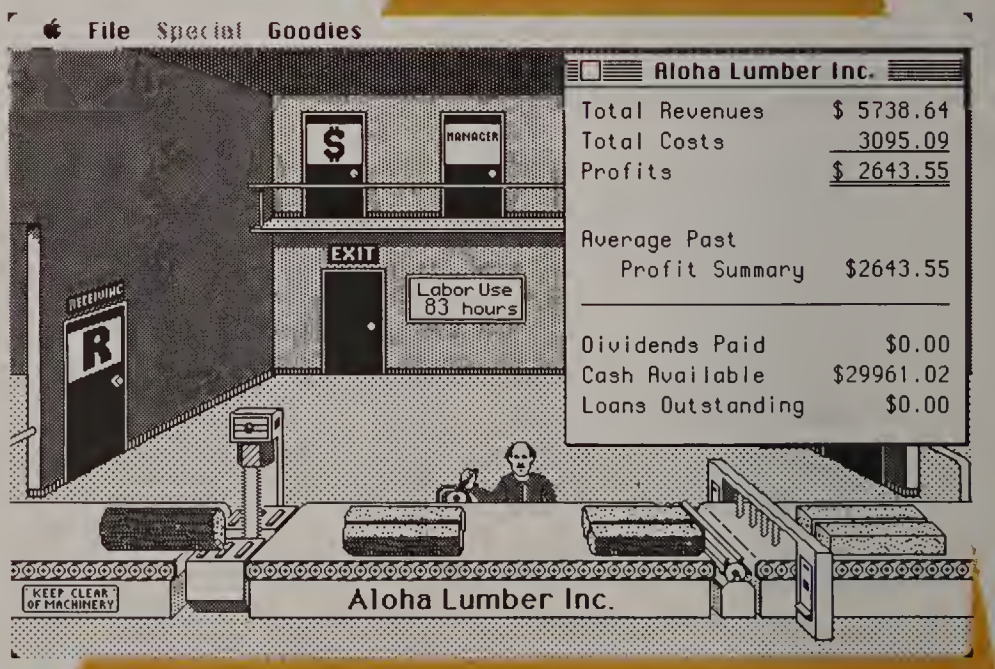
As a smart executive, you will be pleased to know that you have a Macintosh on your desk. Using the Mac, you can display a list of phone numbers, an account of your net worth, or a spreadsheet. The spreadsheet is small–20 rows by 5 columns–and limited to the four basic arithmetic operations, but you can easily do "what-if" calculations and monitor data on your net worth, the stock market, the economy, your managers' performance, and factory production.

Owning Companies

Until you acquire enough stock to supervise management of a company, you must buy and sell stock. The fastest way to accumulate cash is to invest in the local stock market. Once you gain control of a company, your logo appears above the company's factory, and you are allowed admittance to its operations (see "Aloha Lumber"). At that stage of the game, you have to keep an eye not only on your stock portfolio but on your factories as well.

You have managers to run your companies, and as in most companies, some managers are good, and others need lots of supervision. The game's documentation includes profiles of all the managers, whose backgrounds range from used-car sales to Harvard Business School. Your job is not to run the companies yourself but to make sure the managers do a good job. You do this by hiring management consultants, by monitoring and modifying the decisions of your managers, and by changing production and marketing plans. You can modify the advertising budget, the price of your

(continues on page 154)



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(continued from page 152)

product, the number of units you produce, the amount of labor needed to produce the product, and the amount of supplies purchased. The managers will follow your guidelines in the following weeks, but remember that managers like to make their own decisions.

As your companies profit, you have money to buy more stock in your own and other companies. When you gain control of an Aloha company, the spreadsheet automatically adds past and current information about the new acquisition to help you make informed decisions about how to run the company. The excellent documentation suggests stock market and management strategies and provides a comprehensive dictionary of business terms.

Make Millions provides some humorous touches, including gentle but firm error messages and a colorful cast of business associates. One game takes many hours to complete, and you can save more than one game in progress. With its complexity, challenge, and variety of activities, *Make Millions* will undoubtedly appeal to students, game players, and businesspeople who have always dreamed of running an island financial empire.–*Saul D. Feldman*

Make Millions
Scarborough Systems, Inc.
25 N. Broadway
Tarrytown, NY 10591
914/332-4545
List price: $49.95

The Word on Word Games

Playing a word game like Parker Brothers' Boggle without an opponent is about as much fun as playing baseball by yourself. Ideally, you need an adversary whose skill level is roughly equal to yours, someone sharp enough to challenge you but not intimidatingly erudite. If you have a Macintosh, your search for the perfect opponent is over.

Both Hayden Software's ***Word Challenge II*** and Icon Concepts' ***Webster's Revenge*** are Boggle-like word games for the Mac that are challenging, well designed, and fun to play. Both games consist of a grid of letters from which you form as many words as possible by connecting letters. The letters making up each word must be from adjacent cells in the grid, and a letter may be used only once in forming each word. The words must be standard English, but both games give you the final say, so you can cheat if you are so inclined.

A Challenging Foe

Hayden's *Word Challenge* is the more versatile of the two games, although almost to the point of overkill. *Word Challenge* gives you 26 levels of play and two methods of entering words: clicking on the letters in the grid or typing the words at the

(continues on page 156)

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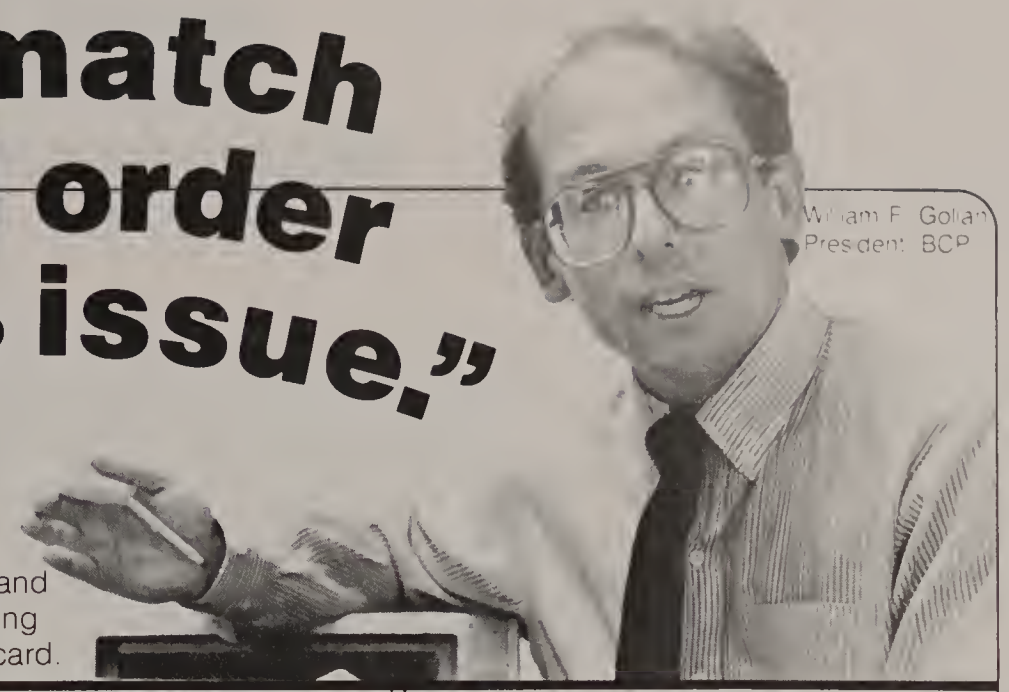

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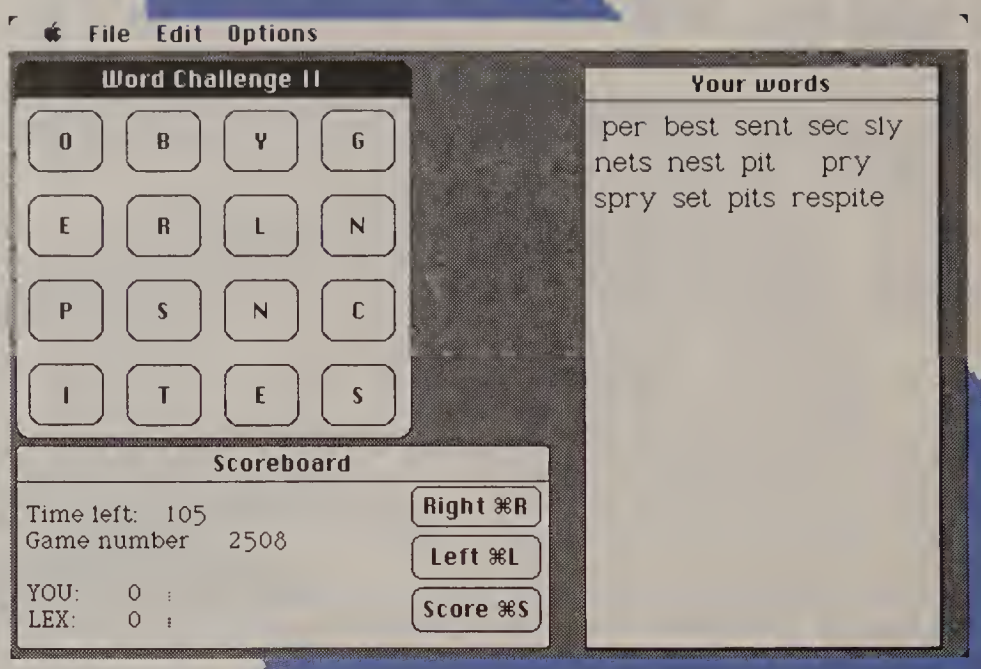
(continued from page 154)

keyboard (see "A Flexible Lexicon"). The program also gives you a choice of 3 by 3, 4 by 4, or 5 by 5 grids, as well as five scoring methods.

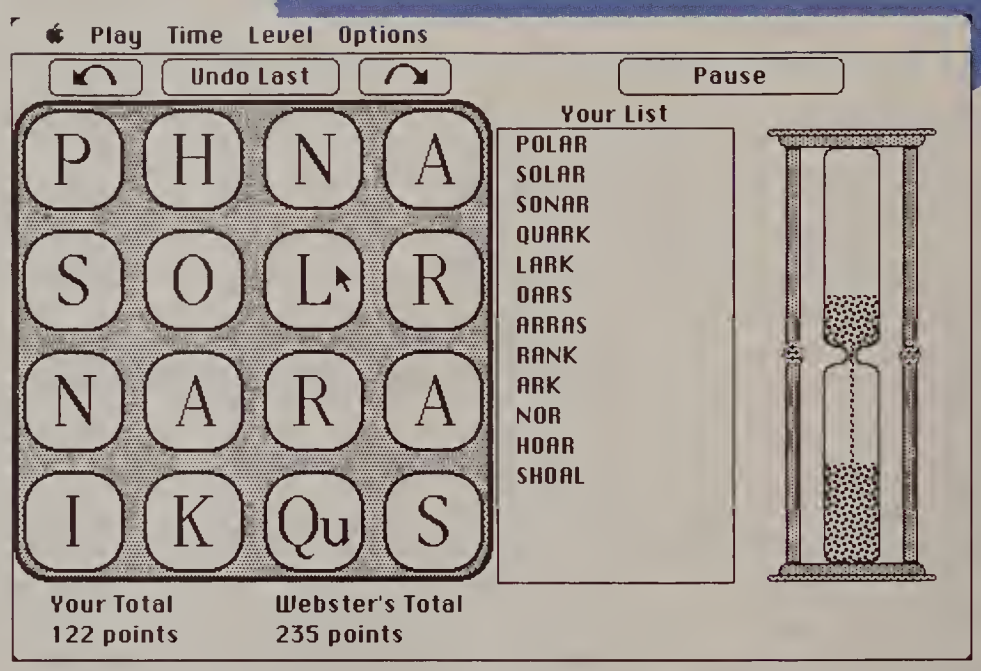
Word Challenge lets you play against the computer or allows two players to compete against each other by pitting their wits against the computer and comparing scores at the end. To reproduce for fair competition, all players ask by number for one of *Word Challenge*'s 196,608 game boards. In case you feel that 196,608 boards don't provide enough variety, *Word Challenge* makes it easy for you to create a custom game board.

Word Challenge lets you choose whether or not to receive credit for embedded words–words within words–such as *troll* in the word *stroller.* The game gives you two ways of crediting embedded words: in Suffix mode you receive credit for all words that begin with the same letter sequence as your original word. Thus, if you find *strainers,* you receive credit for *strain* and *strainer,* but not *train* or *rain.* In All mode, on the other hand, you earn points for all embedded words, whether they occur at the beginning, the middle, or the end of the original word.

Finally, *Word Challenge* lets you set the game timer to from 1 second to 999 seconds, the winning score to from 1 point to 999 points, and the display speed–the speed at which the program displays credited words during scoring–to from 0 to 5 seconds. *Word Challenge*'s flexibility makes it ideal for multiplayer situations because it can be tailored to suit a wide variety of personal preferences and playing strengths.



A Flexible Lexicon
Hayden's Word Challenge *offers 26 levels of play, allowing you to vary your automated opponent's linguistic skills.*



Vengeful Vocabulary
Webster's Revenge *offers five skill levels and playing periods ranging from 1 to 5 minutes.*

Serious Wordplay

Although Icon Concepts' *Webster's Revenge* lacks some of *Word Challenge*'s versatility, it has features that may make it attractive to the serious player. *Webster's Revenge* uses only one grid size (4 by 4), one input method (mouse), and one scoring method. However, the game offers a larger display than *Word Challenge* (see "Vengeful Vocabulary") and instantaneous scoring, a boon for the player who wants to go on to the next round without lengthy delays.

Webster's Revenge offers five levels of play, with a range of difficulty approximately equal to that offered by *Word Challenge.* Most players will find either game's middle level challenging, the top level next to impossible, and the bottom level too easy. Unlike *Word Challenge,* winning scores in *Webster's Revenge* are tied to the selected level of play, so that each game takes about eight to ten rounds to complete. At the highest level, you win if you reach 1000 points before Webster does. At the lowest level, the game is over when one player reaches 50 points. Finally, *Webster's Revenge* also lets you select the playing time, offering a range of from 1 to 5 minutes for each round.

Word game devotees will undoubtedly find *Word Challenge* and *Webster's Revenge* difficult to resist and may find themselves addicted after playing a few rounds. Although the games may not be much help in improving your communication skills–when was the last time you needed to use words such as *stoa, rotl, nard,* or *prosit?*–you'll find hours of challenging entertainment.–*Nicholas Lavroff*

Word Challenge II
Hayden Software Co.
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List price: $39.95

Webster's Revenge
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(continues on page 160)

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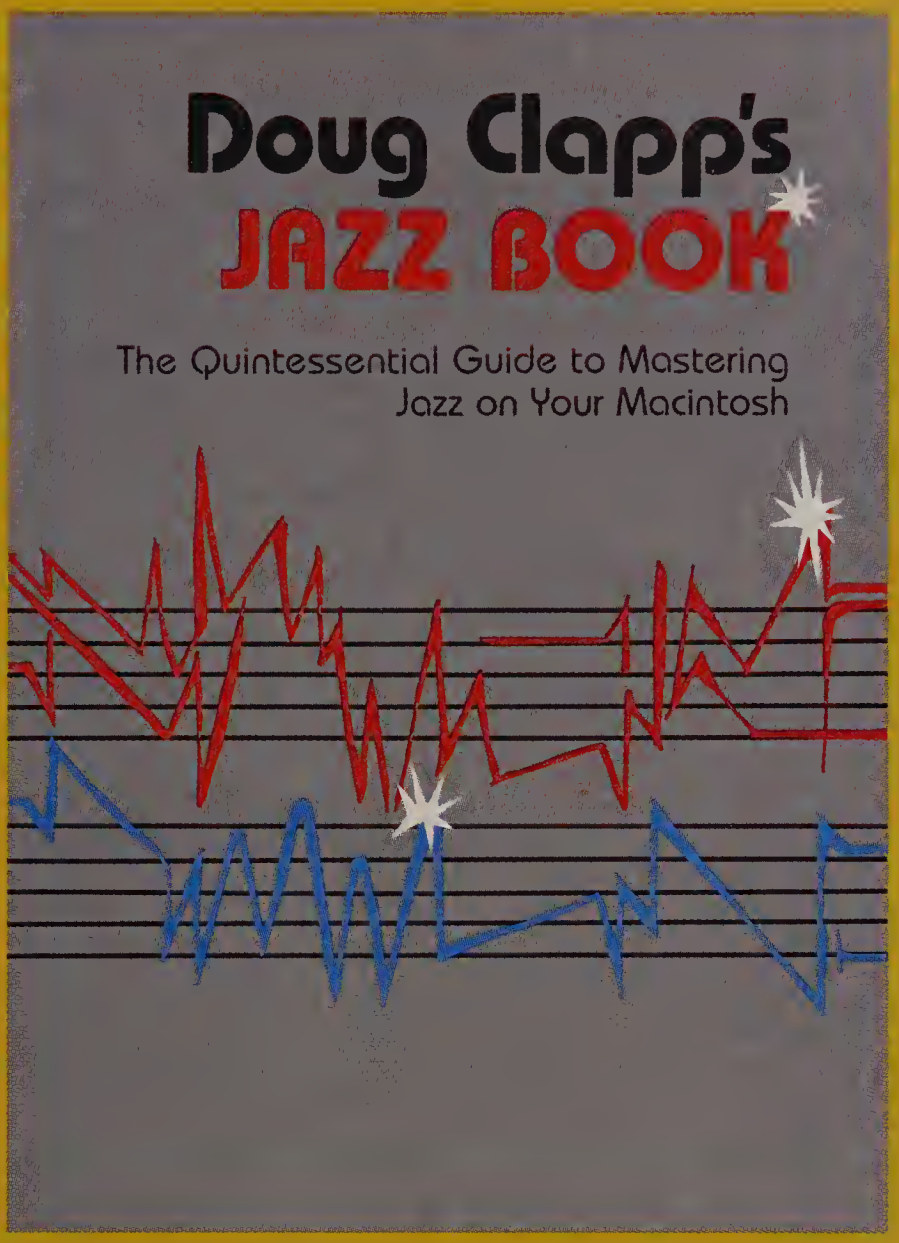

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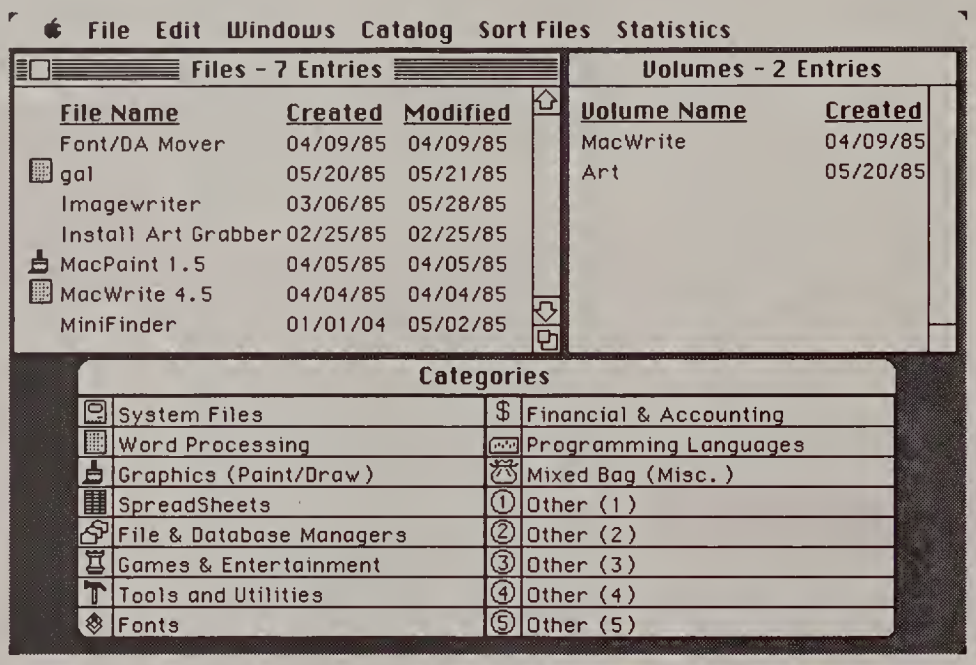
(continued from page 156)

Cataloging Your Disks

Organizing a growing library of programs and documents is a tedious and time-consuming task. In short, it is a task perfectly suited for a computer. ***Mac Disk Catalog*** reads the directories of disks–floppy or hard–and automatically builds and maintains a database cataloging the disks' contents. Since the program reads directories directly from disks, building a disk catalog requires no more effort than inserting disks into the Macintosh's drive. *Mac Disk Catalog* keeps track of which volume, or disk, a file is located in, as well as other characteristics such as the file's size or the date it was last modified. The program lets you sort the disk catalog according to any of those characteristics. You can print a sorted list or save it as a text file that can be transferred to *Multiplan* or any database that accepts data delimited by tabs and carriage returns.



Category Window
Mac Disk Catalog *lets you sort files by category, assigning an icon to each file as it is added to the database.*

Information Windows

When you add a disk to the catalog, information is displayed in two windows labeled Volumes and Files. A disk's name, creation date, date last modified, and amount of free space, as well as the number of files it contains and whether it is a bootable disk, are displayed in the Volumes window. The Files window displays information about each file on the disk: name, creation and modification dates, size, type, and what disk it's on. The program handles up to 500 volumes and 1092 files per catalog.

In addition to organizing files by name, date, or size, *Mac Disk Catalog* lets you assign the files categories such as word processing, programming languages, or graphics. If you prefer, you can make up your own categories (see "Category Win-

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dow"). You can sort files by category using the Sort Files menu. An icon appears next to a file's name in the file listing, indicating the category to which it belongs; for example, a *MacPaint* document is assigned an icon depicting a paintbrush. *Mac Disk Catalog* can usually recognize which program was used to generate a file and automatically assigns the appropriate icon to the file. If *Mac Disk Catalog* doesn't automatically assign an icon to a file, you can choose one manually.

Printing Options

Mac Disk Catalog gives you a number of options for printing a disk catalog. In addition to printing a full-page listing of either files or volumes, the program also prints 3- by 5-inch cards. The manufacturer recommends that you use continuous-form cards rather than single ones.

Mac Disk Catalog also prints disk labels, a feature that can help you organize your library. Since the program saves a print file to disk before printing a listing, you have to be careful to reserve sufficient space on the program disk. This can be a problem when you start building very large databases, particularly if you don't own a hard disk.

Perhaps the greatest drawback to *Mac Disk Catalog* is its capacity of 1092 files per catalog, which limits a single catalog database to somewhere between 50 and 100 disks. If your disks normally hold a large number of small documents, the limit is even more restrictive. *Mac Disk Catalog* offers no way to merge or split databases, nor can it assign a unique number to each disk. If you have already set up a disk numbering system, the only easy way to incorporate your library into a *Mac Disk Catalog* database is to use each disk's currently assigned number as its name.

Disk-Swapping Blues

Mac Disk Catalog is not much fun to use without a second disk drive. During operation the program needs to read data stored on the program disk. If only one drive is available, you're in for a lot of disk swapping. Owners of 512K machines can minimize the problem by running *Mac Disk Catalog* from a RAM disk.

Mac Disk Catalog is a good example of how the Macintosh can make a tedious task easier. Although a well-written manual is provided with the program, the documentation isn't really necessary. Should you need assistance, help messages are available from within the program. Finally, since *Mac Disk Catalog* is not copy protected, it can be backed up and run from a hard disk.

Mac Disk Catalog is an excellent tool for organizing programs and the documents you create with them. With little effort you can produce up-to-date listings of your disks, sorted by almost any criterion. I recommend *Mac Disk Catalog* to every Macintosh owner who has a second disk drive and more than 20 disks.
–David L. Foster

Mac Disk Catalog
New Canaan MicroCode
136 Beech Rd.
New Canaan, CT 06840
203/966-8588
List price: $39.95 □

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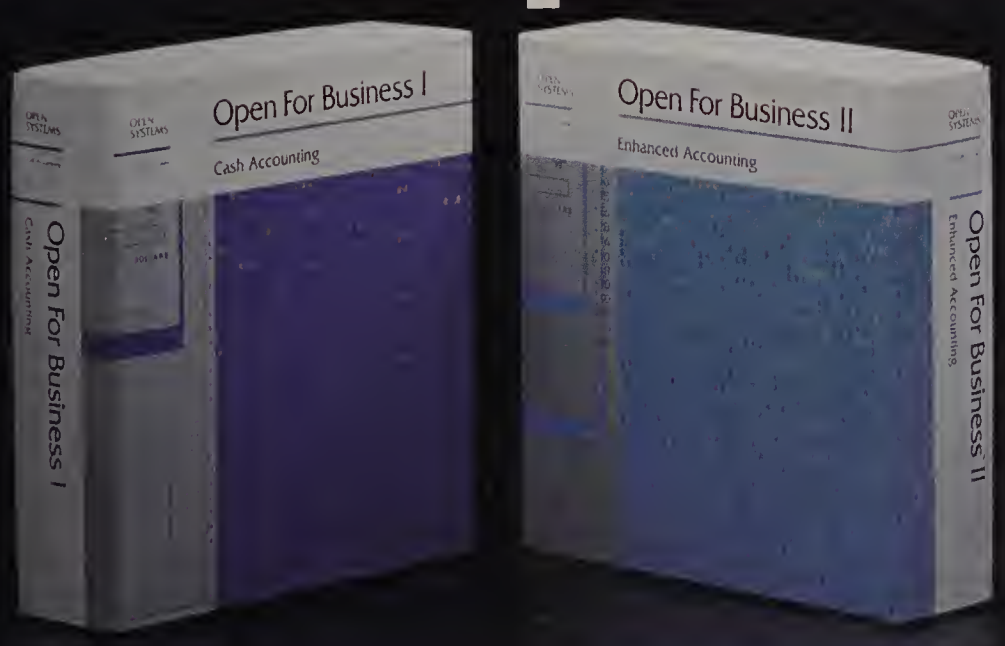

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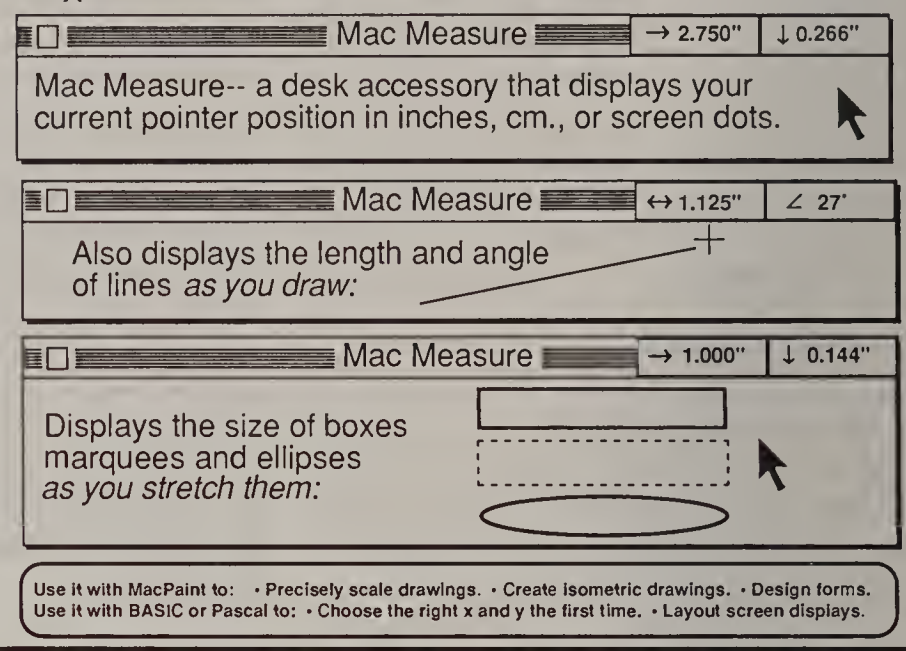

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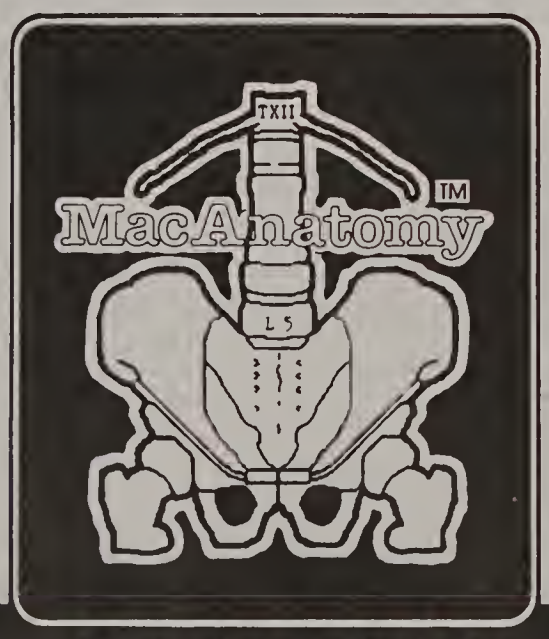

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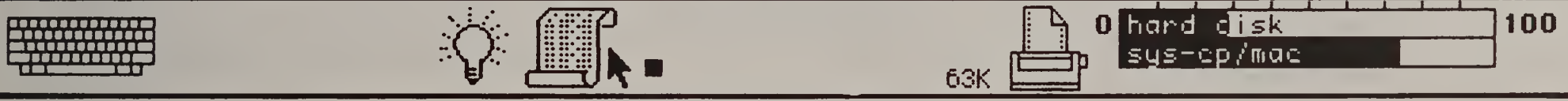

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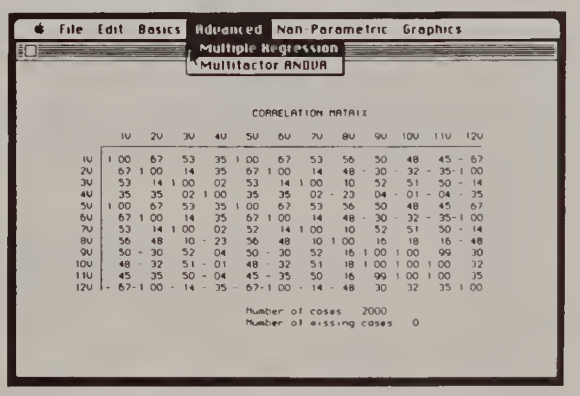

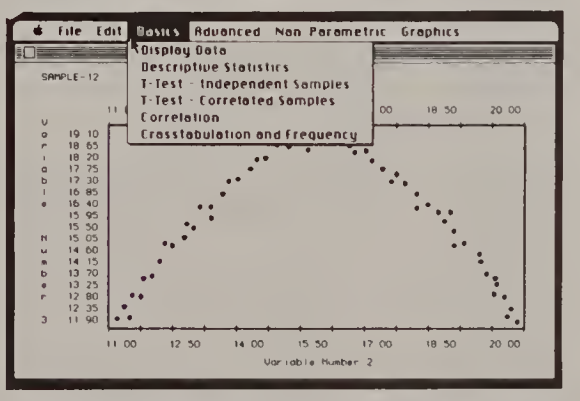

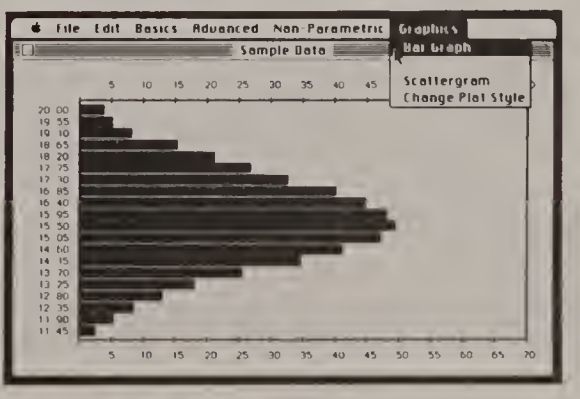

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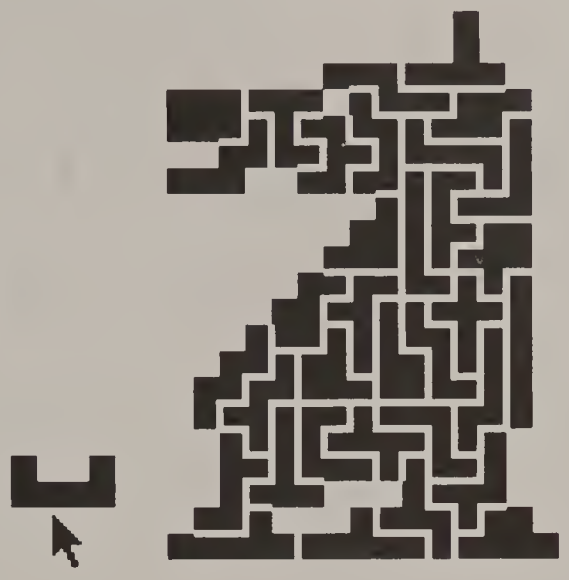

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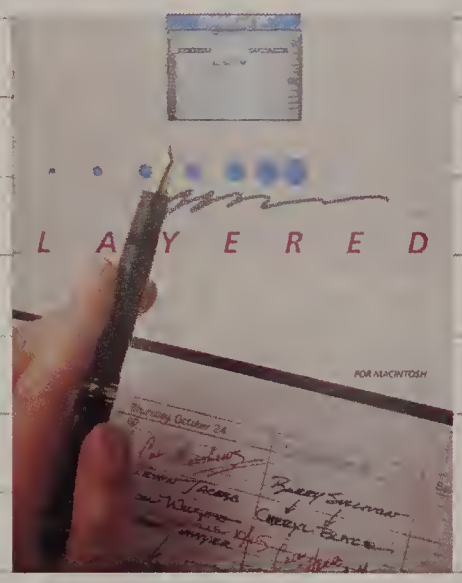

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Open Window

More room on your disks, microfilm printouts, and the Mac sings a birthday song

Edited by Jim Heid

Open Window *offers tips to help you use your Macintosh more efficiently. Submitted by readers, industry experts, and the* Macworld *staff, items in this department address all facets of Mac work, from applications to programming routines to capabilities of the Mac and software not covered in the documentation.*

This month's *Open Window* includes some disk management hints, including a way to squeeze more storage space out of a system disk. For Microsoft BASIC programmers, we have a way of transferring programs between the binary and decimal versions of MBASIC and a tip about using MBASIC to create printer control codes in *Microsoft Word*.

Also this month, a graduate student provides some insight into fonts that are suitable for microfilm reproduction. Another reader is successfully operating the Epson FX-80 printer with the Mac. Finally, we include a method of making First Byte's *SmoothTalker* sing and a technique for using Bill Atkinson's *Screen Maker* program to convert the medieval-style drawing that opens Apple's *Through the Looking Glass* into a *MacPaint* document.

Trashing the Finder

Apple's Finder version 4.1 provides a MiniFinder that lets you open applications and documents without using the Finder. Since the MiniFinder provides only the functions needed to start applications, it loads into memory faster, reducing the time required to quit one application and start another.

The MiniFinder offers another advantage. If you can live without the Finder's other functions—such as erasing disks, printing disk catalogs, and copying, renaming, and deleting documents—you can throw away the Finder and gain an additional 43K of space on your startup disk. You can use the extra memory to store larger applications or more fonts.

To trash the Finder on a two-drive system, follow these steps:

- Start the Macintosh using a startup disk other than the one whose Finder you want to remove.
- Insert the disk whose Finder is doomed in the external drive. Call this disk the "second disk."
- Install the MiniFinder on the second disk by selecting the desired applications and documents, choosing Use MiniFinder from the Special menu, and clicking the Install button.
- Open the System Folder on the second disk, locate the Finder icon, drag it to the trash, and click the OK button when the dialog box asks if you want to throw away a System file.
- Locate the MiniFinder icon on the second disk, select it, and choose Set Startup from the Special menu.

When you start the Mac with the second disk, the MiniFinder appears instead of the Finder, and the disk has an extra 43K of space available. Of course, you need to use a disk with a Finder to copy or remove files to or from the second disk.

Even without an external drive, you can replace the Finder with the MiniFinder. Eject the first disk and insert the second. Then install the MiniFinder and remove the Finder.

If you use Assimilation's *Mac Memory Disk,* you need not remove the Finder from the startup disk. Simply specify that the MiniFinder, not the Finder, be copied to the RAM disk at startup.

Disk Names and Colons

The Macintosh manual claims a document name can include any character except a colon. My wife discovered this claim isn't quite true. If you use a colon in a Save or Save As dialog box, the Mac interprets the characters preceding the colon as the disk name and saves the document to that disk. This trick lets you save a document to a specific disk without having to click the Drive button.

The Macintosh manual is correct, however, if you're changing a document's name using the Finder, in which case typing a colon only creates a space.

Chris Padon
Los Angeles, California

Computers such as the IBM Personal Computer work this way, too, except that instead of typing a disk name before the colon, you type a letter (usually A or B) to indicate which drive the disk is in. In computing parlance, the disk's name is the volume name. *On the Macintosh, if you type a disk name incorrectly, you get an alert box saying that the disk can't be found.—Ed.*

(continues on page 170)

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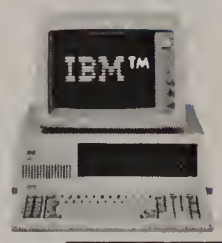

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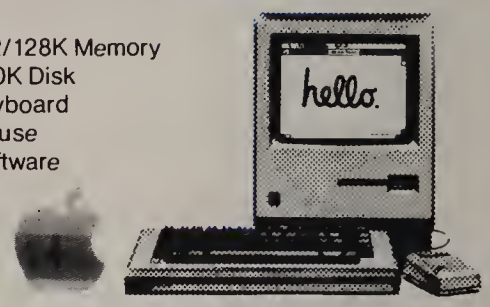

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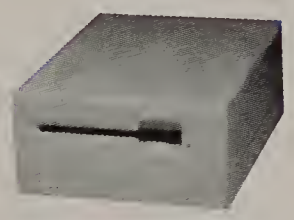

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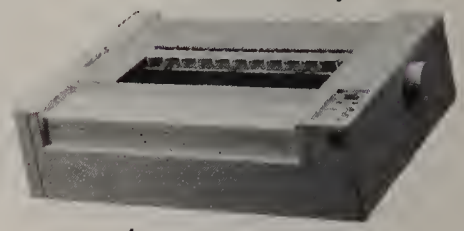

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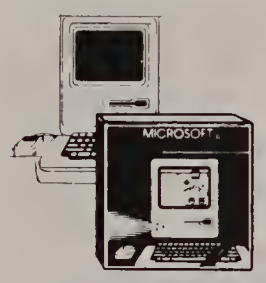

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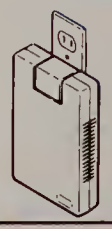

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(continued from page 167)

From Decimal to Binary and Back

The Save As command in Microsoft BASIC 2.0 lets you save a program in Text form, which is required when the program uses the MERGE command. The Text option has another use not mentioned in the documentation. You can use it to transfer programs between the decimal and binary versions of MBASIC.

If you save a program using the default Compressed option, the program is tagged as belonging to the version of MBASIC in which it was saved so that the program cannot be opened by the other version. For example, if you save a program in the decimal version, the program name does not appear among the files in the binary version's Open dialog box. If you save the program in Text form, its name appears in either version's Open dialog box and can be opened from there.

Rodney E. Wood
Los Angeles, California

This tip is useful, but remember that some programs work differently, depending on the version of MBASIC you use to run them. For example, files containing numeric information created by the MKS$ and MKD$ string functions in one version cannot be directly read by the other version. For more information on using both versions, see Chapter 3 of the MBASIC Interpreter documentation. –Ed.

Escape from Word

One advantage *Microsoft Word* has over *MacWrite* is that *Word* can be made to work with letter-quality printers through the File menu's Printer Setup command. The Typewriter option lets you use printers that the program does not have specific drivers for.

```
10 OPEN "escape test" FOR OUTPUT AS #1
20 PRINT #1, CHR$(8) + CHR$(27) ;
30 CLOSE #1
```

Escaping from Word

Used with Word, *this MBASIC program creates a text file containing backspace and escape codes that gives you access to special printer features. You can store the codes in* Word's *Glossary so you can quickly enter them into documents.*

The Typewriter driver lacks several features, such as superscripts and subscripts. Because I bought *Word* partly for its footnoting capability, I sorely missed being able to print superscripts and subscripts.

The solution is to set up *Word* so that it sends control codes to the printer. Control codes are preceded by an Escape character, which is ASCII 27. When a printer encounters an Escape character, it interprets the next character as a command.

I don't know of any way to generate control codes using the keyboard, but you can put them in *Word*'s glossary and use the glossary to enter them into your documents.

- Using any version of Microsoft BASIC, enter and run the program shown in the listing "Escaping from *Word*." Type the program carefully and don't forget the semicolon (;) at the end of line 20. This program creates a text file called "escape test" containing two codes; the first, CHR$(8), is a backspace code, while the second, CHR$(27), is the code for the Escape character.
- Quit MBASIC, start *Word,* and open the "escape test" file on the BASIC disk. Only two characters are in the file. In the Dover font, the characters appear as a half-sized *M* atop a half-sized *D.* In Geneva, they appear as boxes.
- Copy the two characters to the Clipboard, then choose Show Glossary from the Edit menu.
- Type a name for the new glossary entry (I used *e*) and then paste the characters into the Glossary by choosing Paste.
- Save the glossary entry by choosing Save from the File menu while the Glossary window is still open.

Whenever you need to use an escape sequence, type the name you gave the glossary entry, preceded by a space and followed by ⌘-Backspace. Next, type the appropriate command character recognized by your printer. My printer, for example, recognizes Escape-D as a command to print a subscript.

Because you must precede a *Word* glossary name with a space in order to enter the item itself, "Escaping from Word" has the ASCII code for "backspace," which

(continues on page 174)

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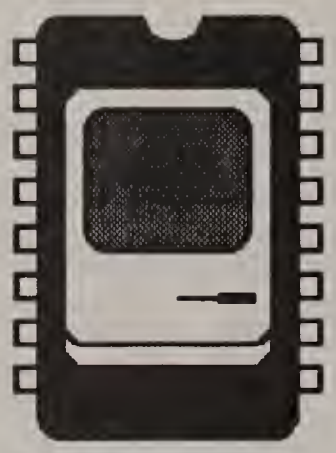

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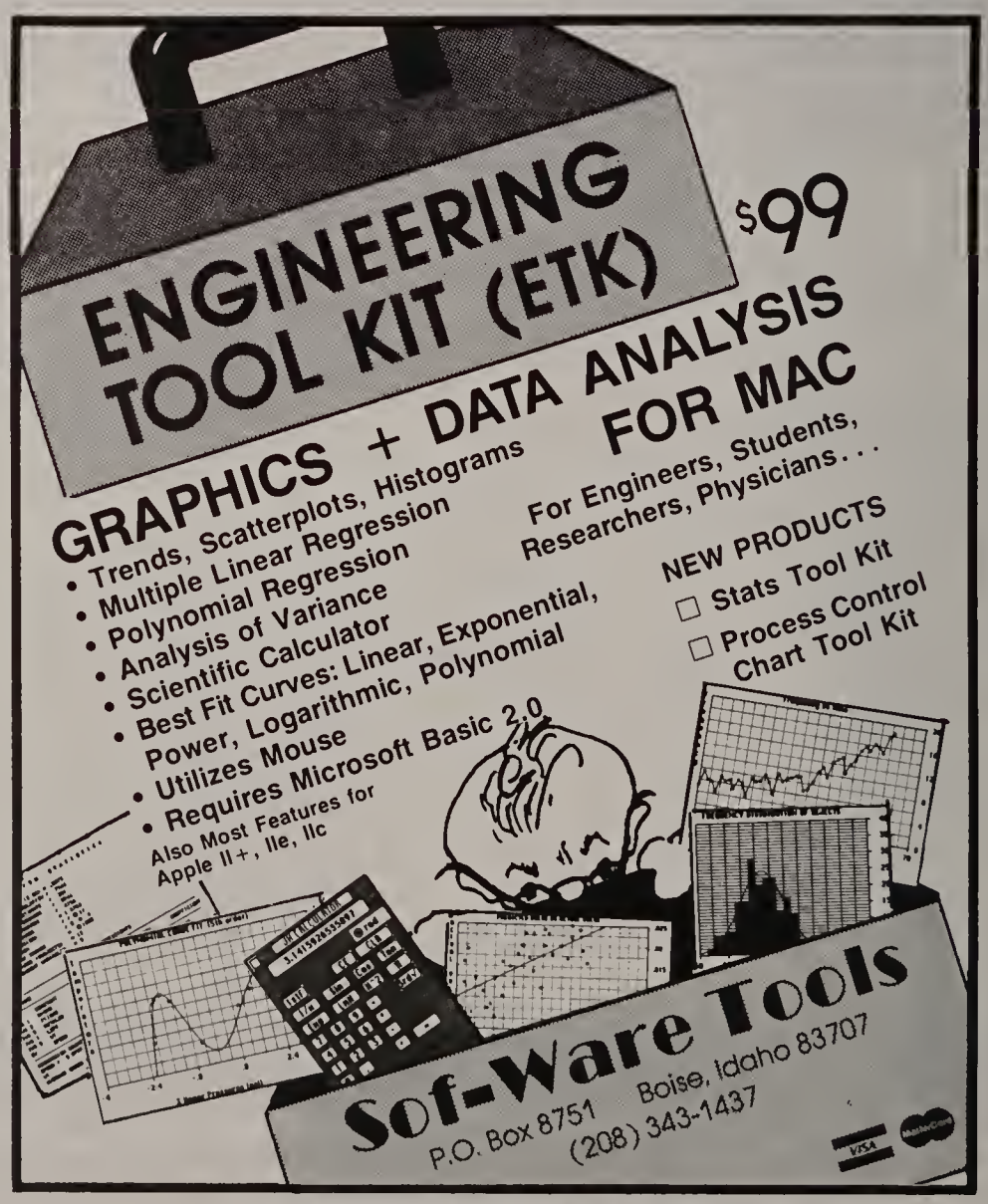

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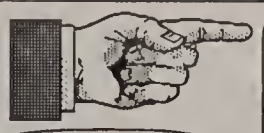

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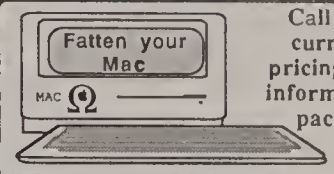

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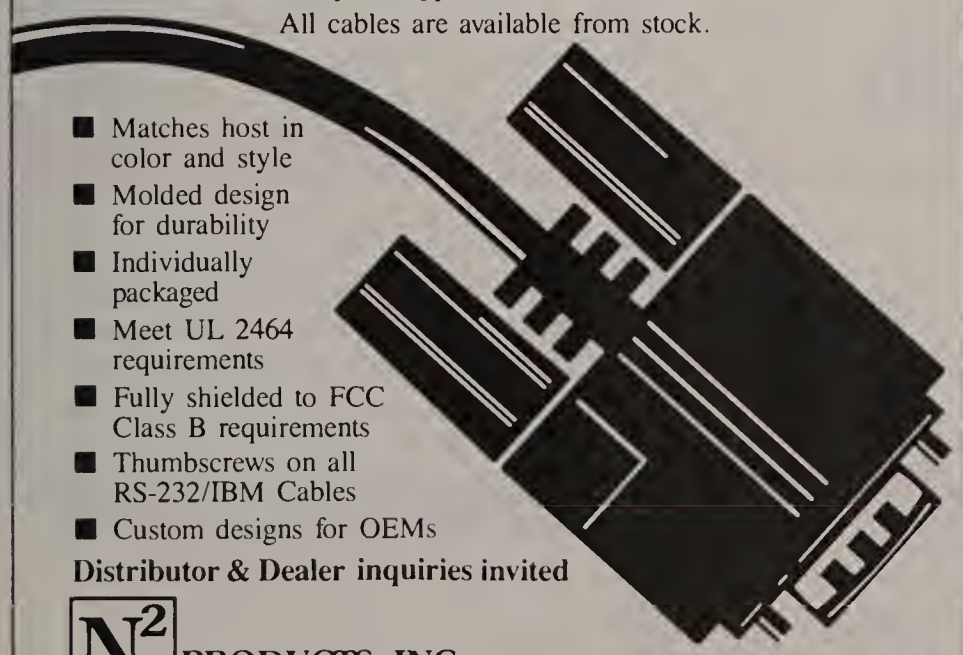

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Circle 340 on reader service card

(continued from page 170)

causes most printers to back up one space, eliminating the space between a subscript or a superscript and the text preceding it.

This procedure has a potential problem. *Word* counts nonprinting characters such as the backspace and escape codes as if they were going to be printed. As a result, each escape sequence you use adds at least four nonprinting characters to a line and may cause *Word* to break the line prematurely.

Stephen L. Millman
Plandome, New York

This ingenious technique works with the Imagewriter, too, provided you select the Typewriter driver using the Printer Setup command. Using the proper escape codes, you can access the Imagewriter's built-in pica, elite, and condensed type styles. Consult the Imagewriter documentation for a list of escape codes and their functions.—Ed.

Mac Makes Microfilm

Many graduate students are using the Macintosh and *MacWrite* or *Word* to produce dissertations printed on the Imagewriter. University Microfilms International, the organization that copies and publishes most dissertations, has explicit directions for submitting a legible typewritten dissertation but does not set requirements for dissertations written on word processors and produced on printers. Before submitting my dissertation for microfilming, I asked University Microfilms whether the 10-point New York font I had chosen would be suitable for reproduction.

According to University Microfilm's manager for dissertation publishing, when 10-point New York is reduced in microfilm, the letters run together and are difficult to read. A dot matrix printout's suitability for microfilm reproduction depends on the type's size, style, and resolution.

I submitted test pages printed in different type styles and sizes. Twelve-point Geneva, New York, and Chicago printed in high quality reproduce well, although New York and Chicago still look heavy when compared to Geneva. The same typefaces printed in standard quality are acceptable,

(continues on page 178)

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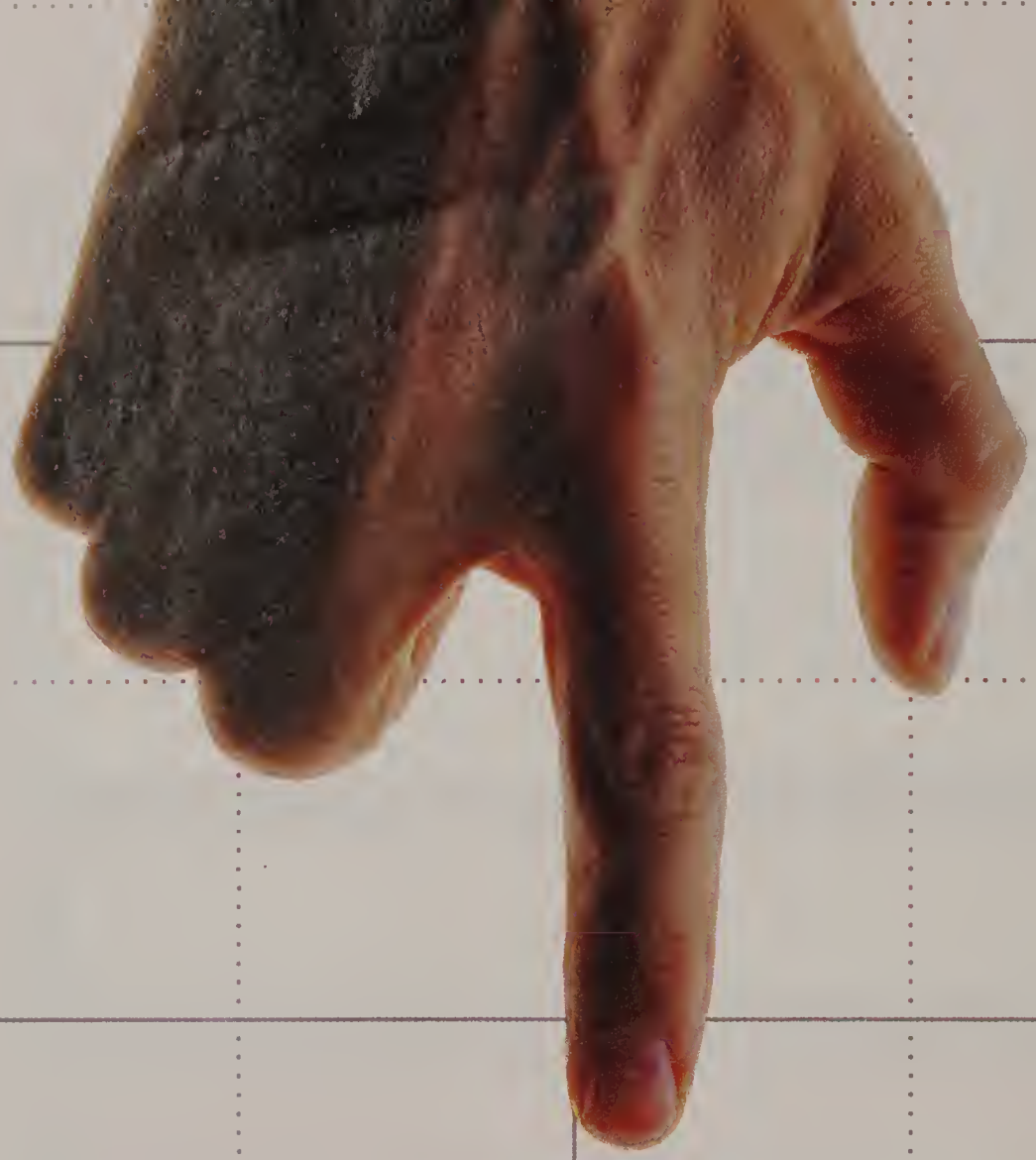

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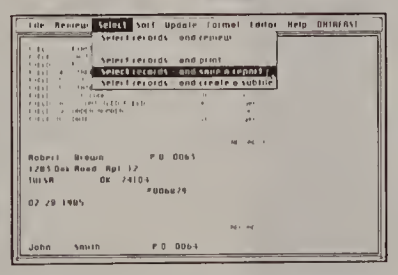

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Circle 47 on reader service card

(continued from page 174)

but the broken letters are distracting. Ten-point type in any font is too small and dense to be legible. So if you want your dissertation to be easy to read on microfilm, submit it in 12-point Geneva.

Daniel M. Nelson
Princeton, New Jersey

The Epson Connection

I was hooked on the Macintosh the moment I first used it, but I didn't want to give up my Epson FX-80 printer.

I called my Epson dealer and learned that a serial interface board available for $99 enables the Epson to emulate the Imagewriter. Installation time was minimal. I installed the board and changed three chips, which I had never done before.

The results have been excellent; I've used my Epson with more than 50 Macintosh applications without any problems. The FX-80's print quality is as good or better than the Imagewriter's. When printing graphics, including the Mac's fonts, the Epson is slower than the Imagewriter because it prints in only one direction. Draft printing, however, is faster. The Epson churns out text at 160 characters per second (cps) versus the Imagewriter's 120 cps. If you use *Microsoft Word,* changing the printer driver to Typewriter provides fast text printing without your having to specify Draft quality. And I can still connect the Epson printer to other computers with its original parallel connector.

The board is available through Epson dealers or through Drusselhaus Computer Products, 837 E. Alosta Ave., Glendora, CA 91740.

C. C. Lee
Honolulu, Hawaii

If you try this modification but have never replaced an integrated circuit chip, here are a few rules to follow. Make sure the pins are aligned with the holes in the socket before you press the chip into place. Also make sure you insert the chip correctly; most chips have a notch or a dot at one end that must correspond with a notch or a dot on the circuit board or the socket. Finally, be aware that chips

(continues on page 183)

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is the most powerful object oriented drawing tool available for the Macintosh™ today. Its ease of use, combined with its powerful capabilities, allows even the most casual user to produce professional looking drawings. The versatility of MacDraft™ makes it ideal for the beginner, as well as the professional.

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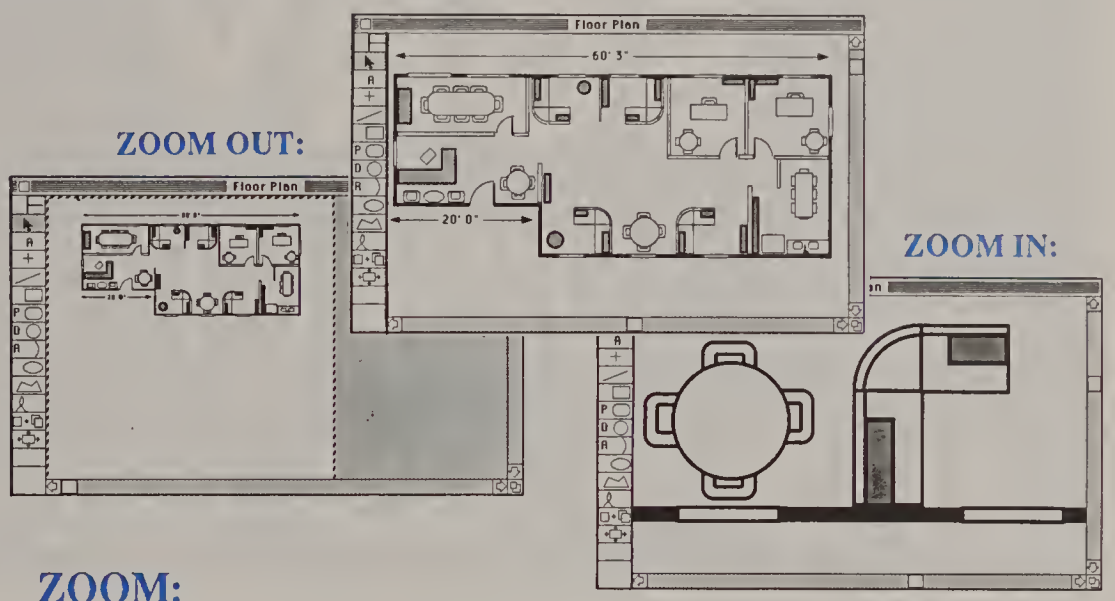
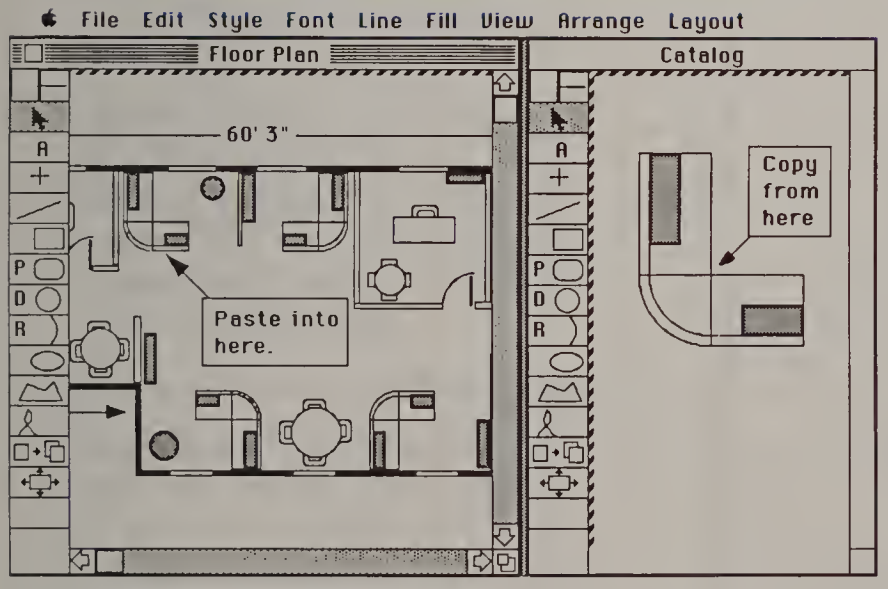


ZOOM:

The Zoom functions allow you to see either a reduced or magnified view of a drawing, while still enabling you to have full access to all of the drawing capabilities of MacDraft™. You can Zoom Out from the normal viewing window, until you can see an entire drawing, regardless of its size. While at a zoomed out view, you can easily add large objects or lines to your drawing that may actually extend beyond the viewing window. Or, you can Zoom In to magnify your drawing, and add fine details that may not be convenient to create at a normal view. You can zoom in on any part of your drawing up to eight times its normal magnification.



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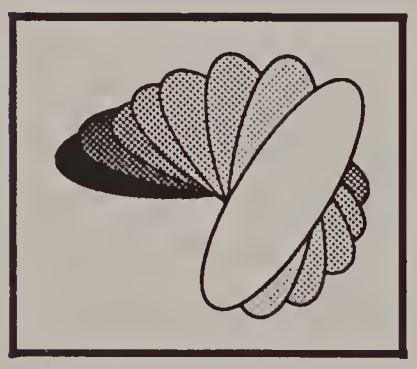
MacDraft™ offers 16 different Feet & Inch scales, as well as 12 Metric scales for your use. This versatility allows you to create a drawing at one scale, and then if you wish, have it automatically converted to a different scale. You can also have several drawings, all at different scales, displayed on the screen at the same time, and can copy and paste between them. When you paste an object into a drawing with a different scale, the object will automatically adjust in size to conform to the scale of the new drawing.



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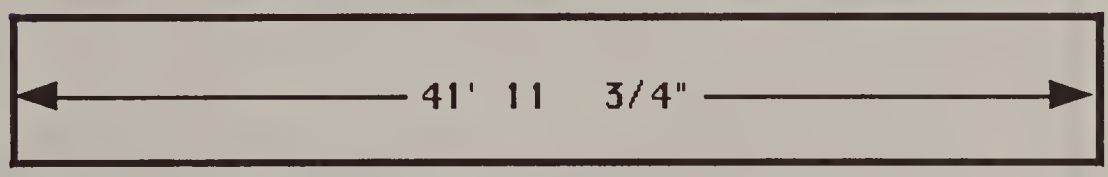

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24 Hour Hotline (503) 928-1270

Mr. Chris Davis
DataPak Software, Inc.
14011 Ventura Blvd. Suite 402
Sherman Oaks, Ca. 91423

07/03/85

Dear Chris;

Congratulations! Your program "My Office" has been chosen as "Program Of The Year" by our product review committee. This group was formed early in the year to review the many programs available to our members and recommend only the best buy(s) in each catagory to them.

When you consider that your competition for this award included Jazz by Lotus, Word and File by Microsoft, and Helix by Odesta to name just a few, winning it becomes quite an accomplishment! The fact that "My Office" retails for only $129.00, some $466.00 less than the much touted Jazz, makes it a truly astounding accomplishment!

The criteria for the catagory "Program Of The Year" while simple, was also the most difficult to meet. Simply stated the chosen program would have to be the most useful program for the greatest number of users whether their needs were for business, home, or recreational purposes. The program also had to be easy to use and have been released between July 1st of 1984 and June 30th of 1985.

"My Office" met all requirements and passed all normal usage tests without a single error message. In addition every effort was made to destroy the integrity of the program by changing fonts and installing and removing desk accessories at random and more often than would normally be done by the average user. We then attempted to customize it (successfully I might add) with Resource Editor, Fontastic, and various other hackers tools. It not only survived and retained it's integrity during all this, it performed flawlessly! Programmer Gary Crandall is to be commended for writing a truly bug free program.

We feel that we can freely recommended "My Office" to everyone who owns a Mac whether they intended to use it for home or business. You may consider this our endorsement of your product and use this letter, in whole or in part, as you see fit.

Yours Truly

Jerry Koszut

Jerry Koszut, Pres.

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(continued from page 178)

are extremely sensitive to static electricity. Don't shuffle across any carpets before installing the chips, and touch a grounded metal object, such as a radiator, just before handling them.–Ed.

MacCroon

Using the pitch commands available in First Byte's *SmoothTalker,* I've created a document that lets the Macintosh sing "Happy Birthday." Simply start *SmoothTalker* and type the document shown in "Birthday Song," replacing *name* with the birthday person's.

Dick Kwan Ng
Boston, Massachusetts

The results sound like a drunk baritone. Still, it's an amusing application of SmoothTalker*'s pitch commands.–Ed.*

Stepping into the Looking Glass

The medieval-style illustration that greets players of Apple's *Through the Looking Glass* can be converted to a *MacPaint* document using Bill Atkinson's *Screen Maker* program. Open *Screen Maker* and choose Screen to Doc from the File menu. Insert the *Looking Glass* disk in the external drive, or choose Eject if you have a one-drive system, and open the document named X. Next *Screen Maker* asks you to name the new *MacPaint* document. Type a name in and press Return, and the drawing is saved as a *MacPaint* document.

Alex Yung
Baltimore, Maryland

For readers not familiar with Screen Maker, *it's a public-domain application available through user groups and MAUG.* Screen Maker *converts any* MacPaint *document into a screen that appears on startup instead of the familiar "Welcome to Macintosh" screen.*

To use Screen Maker, *first design your startup screen in* MacPaint. *Because the Macintosh screen is smaller than the 8½- by 11-inch size of* MacPaint *documents,* Screen Maker *converts only the top portion of the document into a startup screen–more specifically, a rectangle 512 dots wide and 342 dots tall. Make sure, therefore, that your screen fits within this area, which is roughly 5 inches by 7 inches (see "Making a Startup Screen").*

(continues on page 187)

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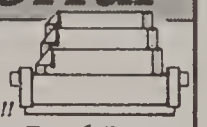

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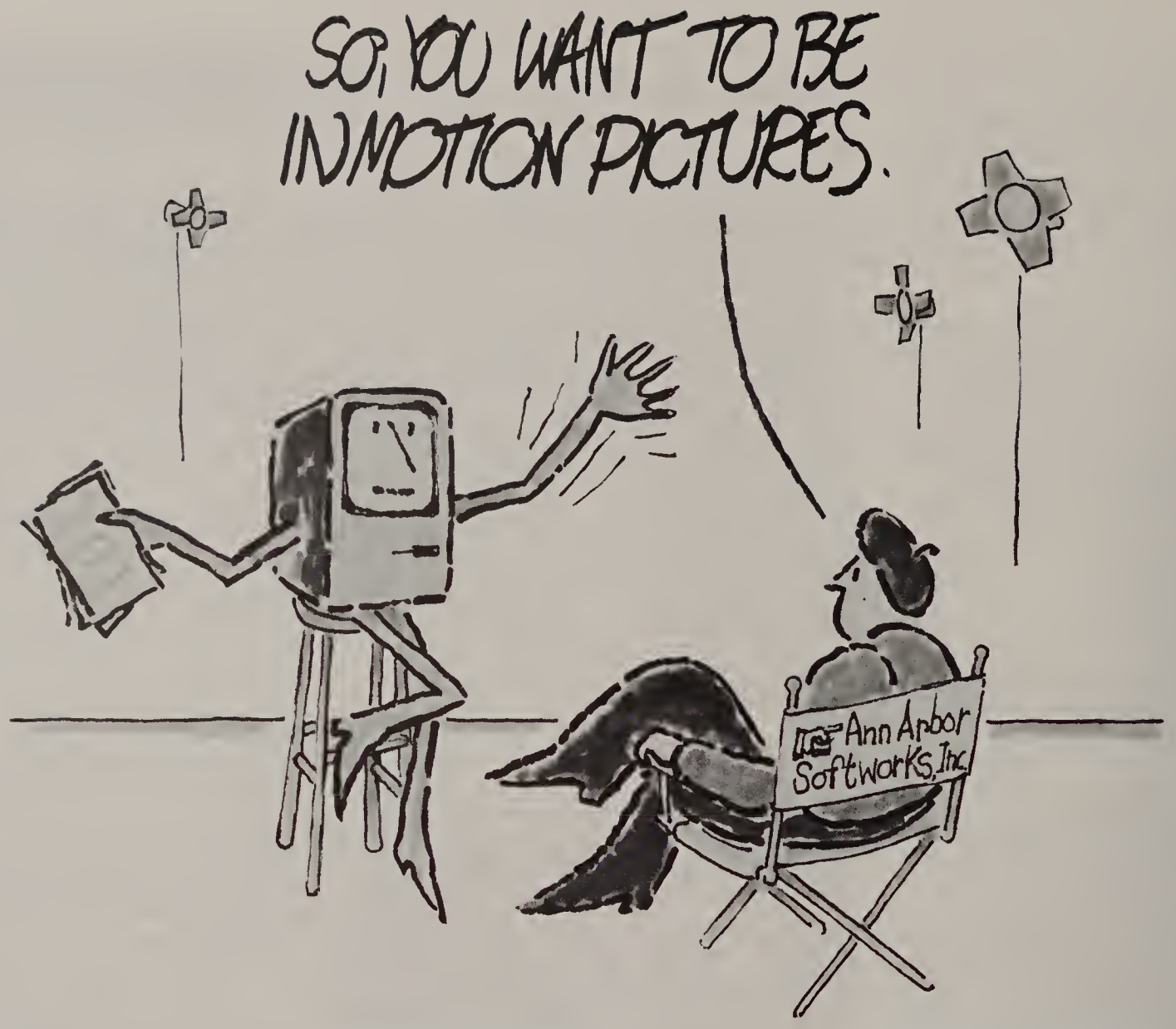

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(continued from page 183)

Save your screen design, quit MacPaint, *and open* Screen Maker. *Choose the Doc to Screen command from the File menu. Then locate your* MacPaint *document and double-click it. Next,* Screen Maker *asks you to name the screen. The default name is StartupScreen, which must be used in order for the screen to appear when you restart the Mac.—Ed.*

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```
<<V9P3S0 Happy <<P4 Birth>>day <<P8 to >> <<P5  you >>>>
<<V9P3S0 Happy <<P4 Birth>>day <<P9 to >> <<P6  you >>>>
<<V9P3S0 Happy <<P9 Birth>><<P8 day >> <<P7  to>> <<P5 name >>>>
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```

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○ *Switches*

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■ *Hardware*

○ *Interfaces*

Granny Smith Connection
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ZAP Logic Corporation, 290 Larkin St., Buffalo, NY 14210 208-5647 Yonge St., Toronto, M2M 4E9, Canada, 416/225-8815.

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Safeware, The Insurance Agency Inc., 2929 N. High St., P.O. Box 02211, Columbus, OH 43202, 800/848-3469 (Natl), 614/262-0559 (OH)

■ Publications

Macintosh Typefaces

A Reference Guide to Shapes, Sizes and Styles. Written for the non-technical user, it includes over 100 pages of complete font listings and many useful appendices. A must for anyone who needs to present text professionally. Send $14.95 plus $2.50 postage & handling. In CA add $.90 sales tax.
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○ Communications

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Infrastructure Software, 701 Devonshire Dr. C-18, Champaign, IL 61820, 217/351-0066

○ Compilers

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Chariot Software Group, 3659 India St., San Diego, CA 92103, 619/298-0202

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LogiMac is an interactive digital logic drawing and simulation package for the Macintosh. It is intended for use by engineers, students, teachers, and hobbyists interested is designing, documenting, and experimenting with digital logic hardware. It supports most common gates, flip-flops, etc. $79.95 (U.S.).
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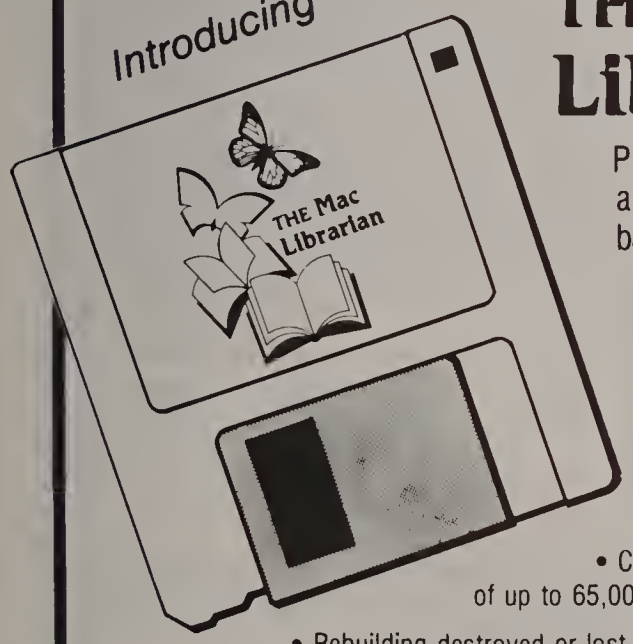

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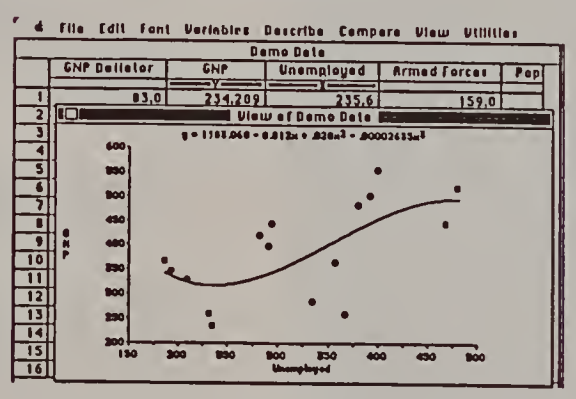

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Iconoclasm
Using the brush, I created an outline of the figure and filled it with black from the paint bucket. I sketched the facial features and the crucifix with the pencil. After the figure was complete, I used a small brush to trace the edges of the figure with gray.

Charles Miller
Nacogdoches, Texas

Iconoclasm

$250–Second Prize

The Return of the Dinosaurs
I made the volcano from gray textures and then built the city with hollow rectangles. I filled the rectangles with customized patterns and used *ClickArt: Effects*' Distort feature to make the buildings look like they were falling into a river of lava. I drew the dinosaur in a separate document, then made copies, distorted them, and pasted them into the composition.

Charles B. Murphy
Chicago, Illinois

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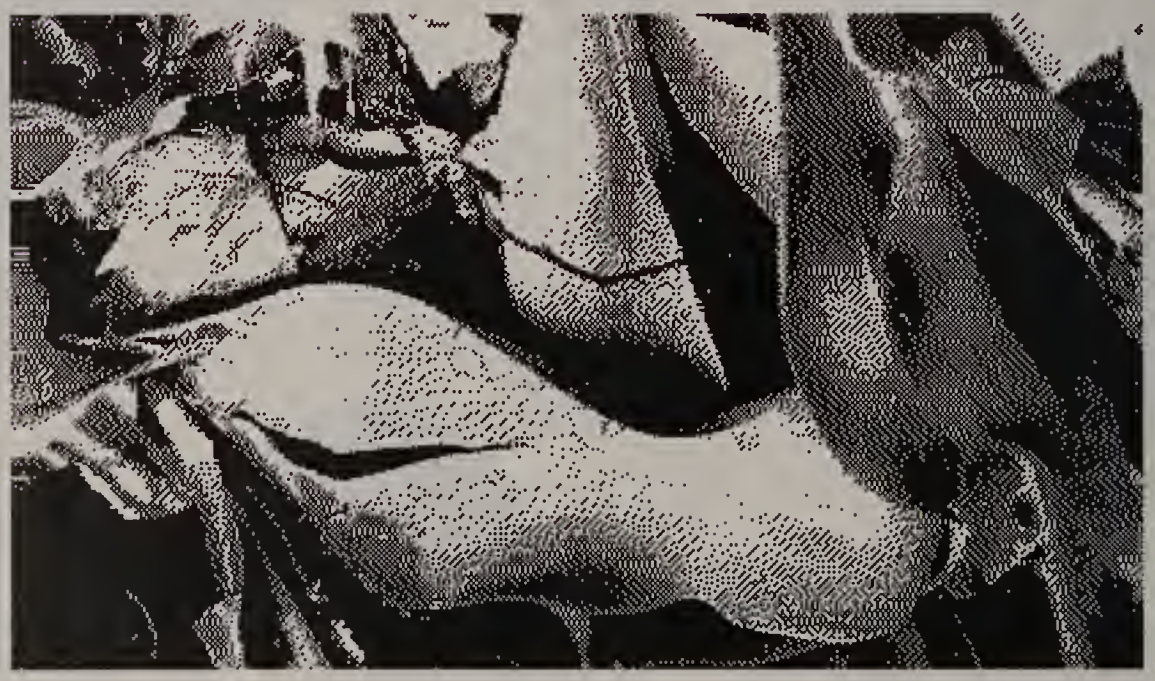
$250–Second Prize

Leaves
I've worked on this drawing off and on since I got my Macintosh several months ago. I used the pencil and FatBits to outline the leaves, then shaded them in with the paintbrush. I altered some of the patterns in FatBits to make different shades.

Jon Gordon
Stamford, Connecticut



Leaves

Dreamtime
This drawing started out with a single running figure. I used the Option key to make several copies, then added the waves and the sand. It reminded me of a daydream, so I drew the seated figure. I used the Edit Pattern feature to make a few of the patterns in her hair as well as the star pattern in the background.

Valenta de Regil
Berkeley, California

Dreamtime

Potato Pickers
I wanted to see if I could create an illustration in *MacPaint* that would have the same colorful appeal as a picture in a children's storybook. I began by sketching the outlines of the characters with the small square brush. Then I added patterns to the figures with the paint bucket. *MacPaint*'s Undo command allowed me to try different patterns before settling on one.

Daniel Pouesi
Carson, California

Potato Pickers

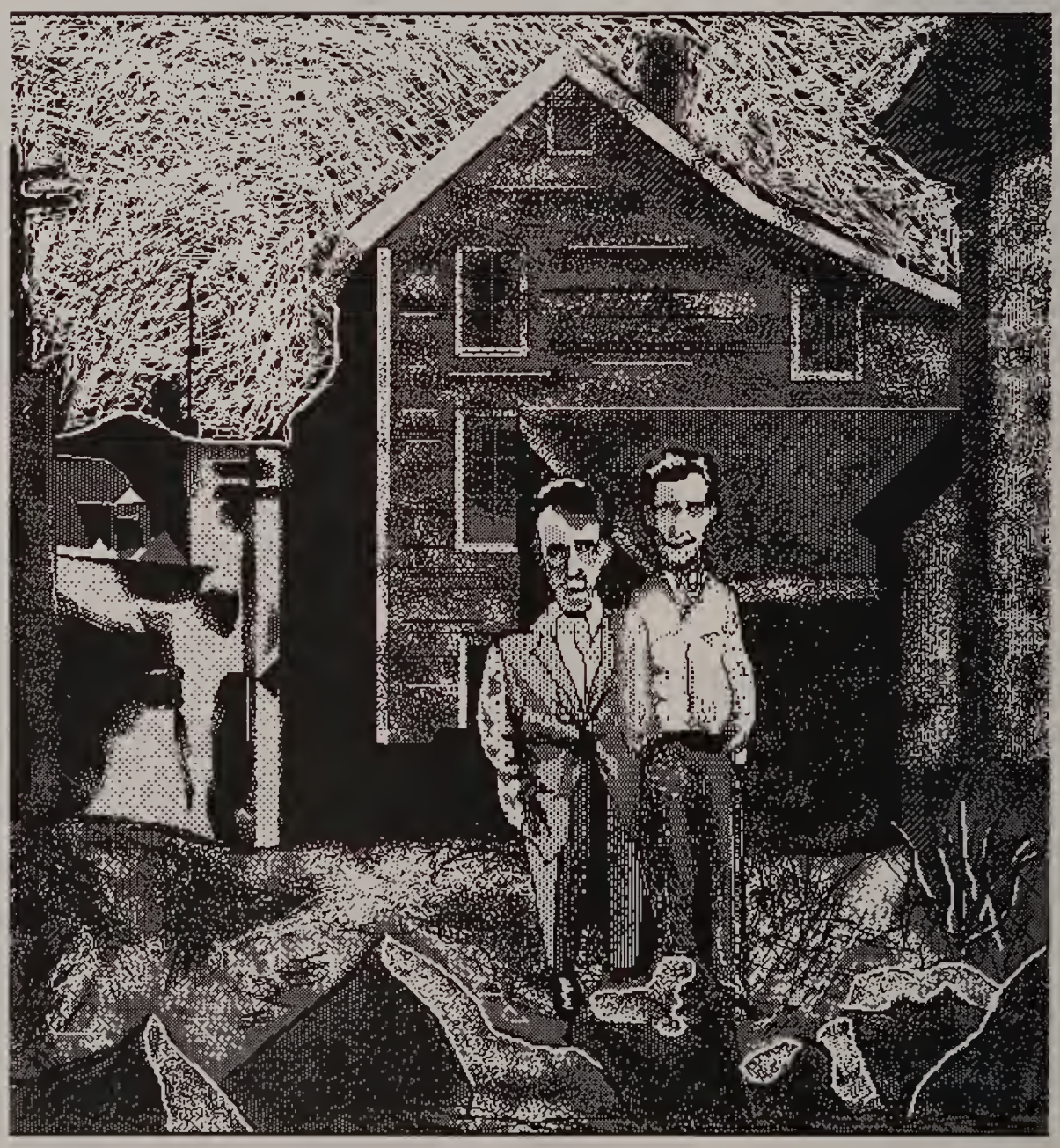
City Kachina
I began by drawing a patterned area and selecting a portion of it with the selection rectangle. Then I held down the ⌘ key and stretched the selection horizontally and vertically until the pattern filled the screen. To complete the drawing, I added the running figure.

Deanne C. Bauer
New York, New York

City Kachina

Neighbors
I painted the screen with black and used the pencil and the spray can to "gouge out" the drawing. I drew the background first and then worked on the neighbors in a separate file and pasted them in. I made liberal use of *MacPaint*'s transparent paint feature, pressing the ⌘ key to overlay patterns.

Thom Gillespie
Juneau, Alaska



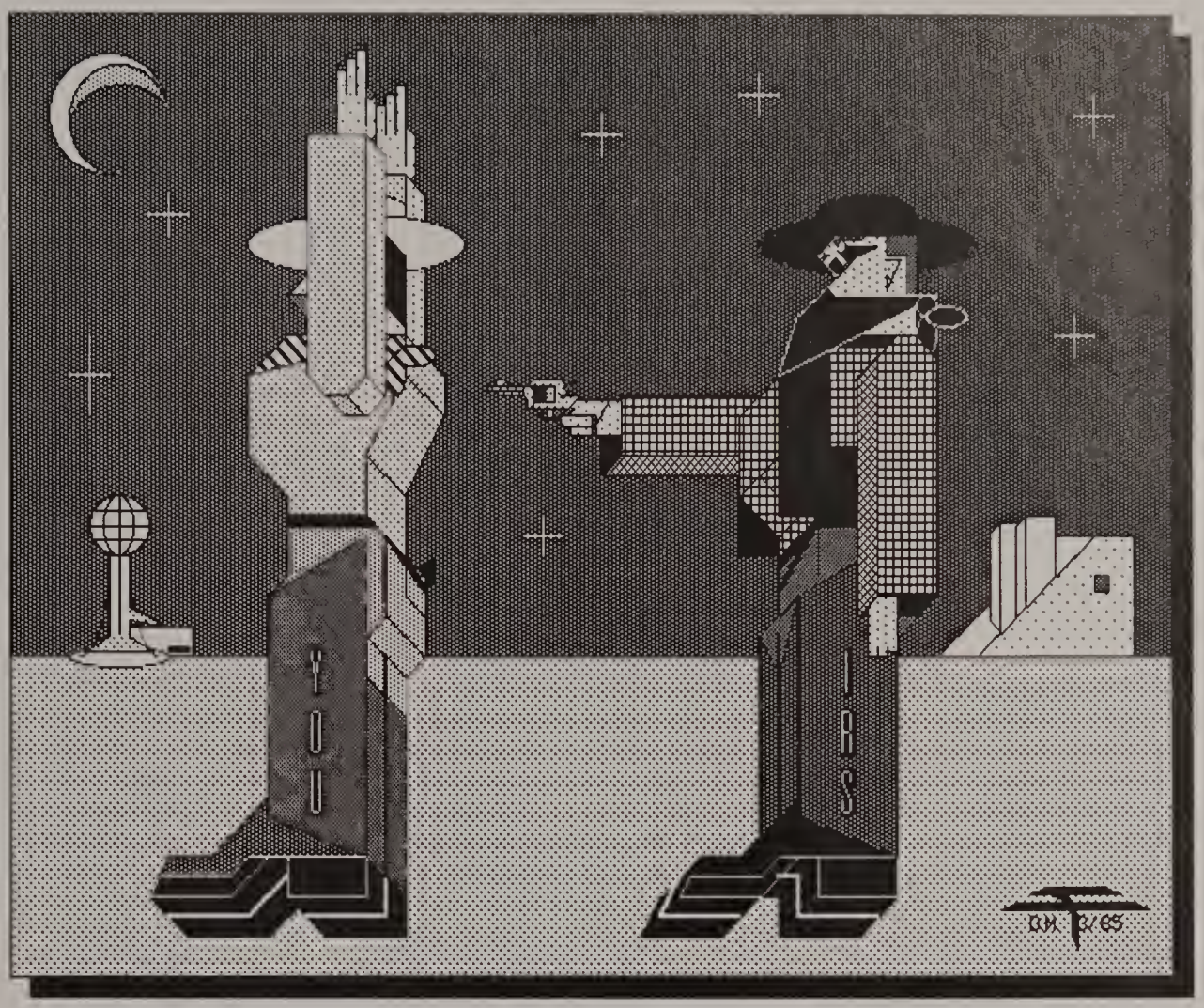
Neighbors

IRS Holdup
I drew this piece using *MacDraw*. It's made up almost entirely of filled polygons, using 45-degree angles to give the illusion of depth. Many of the areas containing fine details, such as the heads and hands, were drawn at twice their final size in a separate document, then reduced, copied to the Clipboard, and pasted into the first document.

David Frost
Knoxville, Tennessee

Nightmare
This is the second drawing I've done on the Macintosh. I borrowed my father's Mac, and it took me only 10 minutes to learn how to use *MacPaint*. I filled the screen with black and then used a brush, the pencil, and the spray can to draw the nightmare scene.

Emiko Kuratani
Canton, New York □



IRS Holdup

Nightmare

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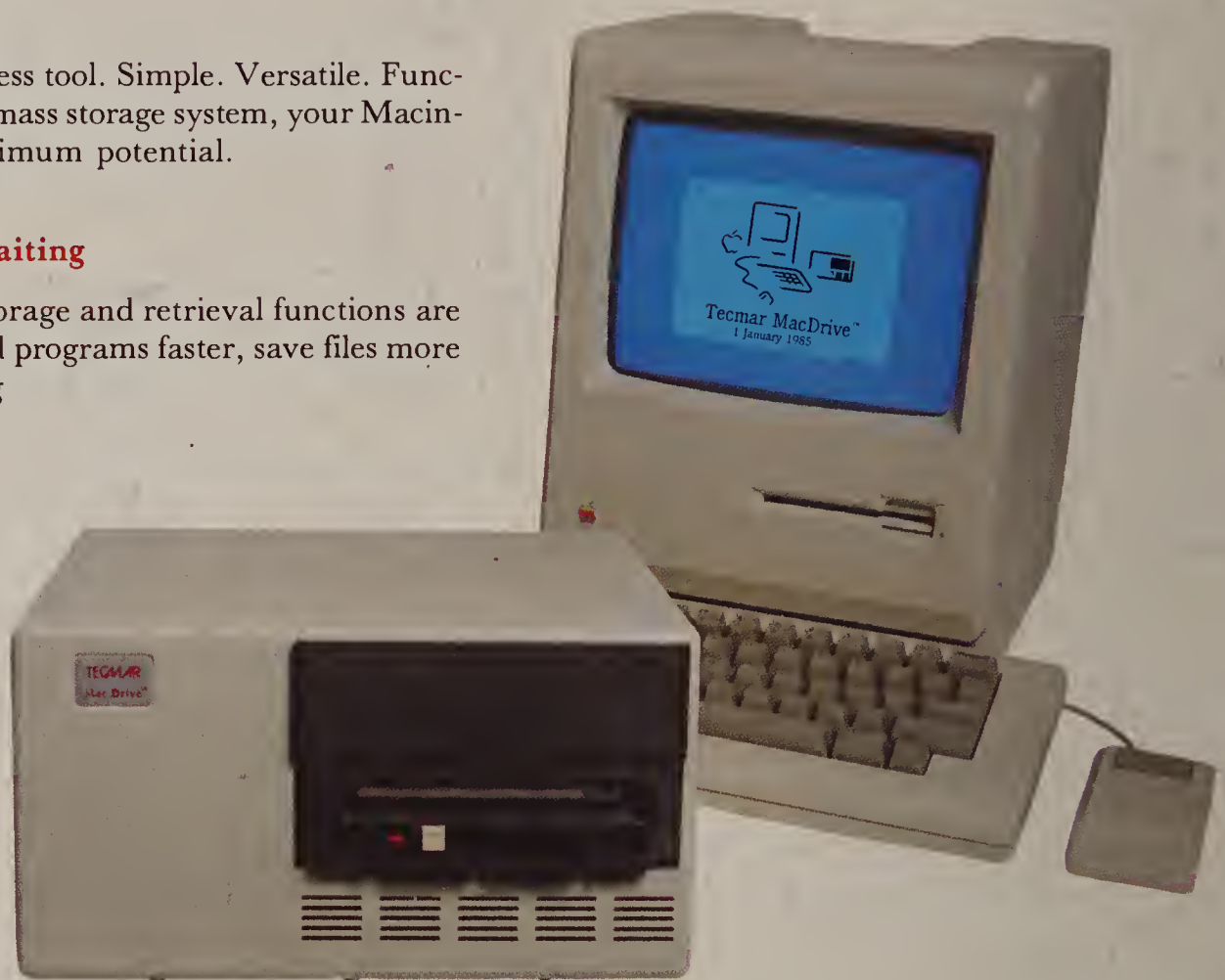

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